THE FORTY-SEVENTH YEAR.

Companion to the Almanac;

OR,

YEAR-BOOK

OF

GENERAL INFORMATION

FOR

1874.

PART I.

GENERAL INFORMATION ON SUBJECTS OF ASTRONOMY, SOCIAL ECONOMY, CURRENCY, AND FINE ARTS.

PART II.

ARCHITECTURE AND PUBLIC IMPROVEMENTS,
METROPOLITAN CHARITIES,
MUSIC,
LEGISLATION, STATISTICS, AND CHRONICLE OF 1872-73.

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COMPANION TO THE ALMANAC

FOR

1874.

PART I.

GENERAL INFORMATION ON SUBJECTS OF ASTRONOMY, SOCIAL ECONOMY, CURRENCY, AND FINE ARTS.

COMETS AND METEORS.

GREAT interest has recently been excited in the subject of meteors and comets, notwithstanding the circumstance that many years have lately passed without the appearance of any conspicuous comet. The chief cause of this interest is indicated in the circumstance that comets and meteors have come to be associated together. The very title of the present essay points to the most remarkable fact yet discovered respecting either order of bodies. Few would have supposed a quarter of a century ago that comets and meteors could be in any way connected. Comets had long been regarded as the most widely ranging of all the celestial objects coming within the limits of our solar system. And not only so, but it had been recognised that the mere space occupied by a comet of the larger sort, exceeds many times the volume even of our sun, though he exceeds Jupiter more than a million times in volume, while Jupiter exceeds our earth in a yet greater degree. Meteors, on the other hand, were long held to be mere phenomena of our own atmosphere, and even when it began to be recognised that they visit the earth from the interplanetary spaces, it was seen that each individual meteor is utterly insignificant in dimensions, not merely in comparison with Jupiter or the earth, but even when compared with the smallest member of that ring of asteroids which circles between the paths of Mars and Jupiter. That any association should exist between bodies so utterly unlike, to all appearances, as comets and meteors, would therefore have seemed, thirty years ago, a wild and visionary notion.

I propose to indicate here the leading facts on which the present views respecting comets and meteors have been based, and inasmuch as a complete account either of comets or meteors would occupy much more space than is at my disposal, I shall leave unnoticed all those circumstances which either have no special bearing on recent researches, or which may readily be found in the ordinary textbooks of astronomy.

The first noteworthy circumstance in the history of cometic research, was the discovery of the fact that comets travel, in obedience to the law of gravity, on paths which are often of enormous extent and eccentricity. It happens, not unfrequently, that one of these bodies travels from out the interstellar depths, and on a path which is *literally* of incalculable extent, since in point of fact, the part near the sun, the only part which the terrestrial observer can examine, is so shaped as not to be distinguishable from the curve called a parabola. One may describe such a visible path as resembling one end of an oval of infinite length, using the word "end" in the sense in which one speaks of one end of an egg. Now a comet arriving on such a path, draws nearer and nearer to the sun, moving when first seen almost as if going to rush straight upon his globe. More and more swiftly it rushes onward, until quite close to the sun, when it sweeps round him and returns, very swiftly at first, but with gradually diminishing velocity, to the depths from out of which it had arrived. Such a body if it approaches very near to the sun, moves when nearest to him at a rate of more than 350 miles in every second of time.

The comet called Newton's was of this kind, and the history of this comet is not only full of interest in itself, but throws an important light on the special subject of this essay. Let us therefore examine it attentively.

Newton's comet appeared in November, 1680. It was not very bright when first seen, but when at about the earth's distance from the sun, it began to throw out a tail. It passed at its nearest to the sun on December 8, and was then only one-sixth of the sun's diameter from his surface—travelling at the rate of 1,200,000 miles an hour. "*Now observe one thing*," says Sir J. Herschel; "the distance from the sun's centre was about one one-hundred-and-sixtieth part of our distance from it. All the heat we enjoy on this earth comes from the sun. Imagine the heat we should have to endure if the sun were to approach us, or we the sun, to one one-hundred-and-sixtieth part of its present distance. It would not be merely as if 160 suns were shining on us all at once, but 160 times 160, according to a rule which is well known to all who are conversant with such matters. Now that is 25,600. Only imagine a glare 25,600 times fiercer than that of an equatorial sunshine at noonday, with the sun vertical. And again, only conceive a light 25,600 times more glaring than the glare of such a noonday! In such a heat there is no substance we know of which would not run like water, boil, and be converted into smoke or vapour. No wonder the comet gave evidence of violent excitement, coming from the cold region outside the planetary system, torpid and icebound. Already, when arrived even in our temperate region, it began to show signs of internal activity; the head had begun to develop and the tail to elongate till the comet was for a time lost sight of. No human eye beheld the wondrous spectacle it must have offered on the 8th December. Only four days afterwards, however, it was seen;

and its tail, whose direction was reversed, and which, observe, could not possibly be *the same tail* it had before—(for it is not to be conceived as a stick brandished round, or a flaming sword, but fresh matter continually streaming forth)—its tail, I say, had already lengthened to an extent of about ninety millions of miles, so that it *must* have been *shot out* with immense force in a direction *from* the sun, *a force far greater than that with which the sun acted on and controlled the head of the comet itself, which, as the reader will have observed, took from November* 10 *to December* 8, *or twenty-eight days, to fall to the sun from the same distance, and that with all the velocity it had on November* 10 *to start with.*"

The reader is specially invited to notice the evidence here given of a repulsive power exerted by the sun on the matter of comets' tails. It will be seen, as we proceed, that this is one of the most important points in the theoretical consideration of the nature of comets, and particularly in the discoveries of the connection between comets and meteors.

The next comet whose history bears immediately on our subject, is the one known as Halley's, which appeared in 1682. If space permitted I should say much of the investigation of the motions of this comet, the discovery of its periodicity, the prediction of its return in 1759 (fulfilled by the event) and the much more exact prediction of its appearance and movements in 1830. But interesting though these matters are, and also very necessary to the complete discussion of comets, it is essential here to confine our attention to details of another kind. It has been well remarked by Sir J. Herschel, who studied this comet with great care and with a very powerful telescope, that "the whole series of its phenomena gave more insight into *the interior economy of a comet*, and the forces developed in it by the sun's action than anything before or since." I take his narrative, as giving the best and most trustworthy account of the comet's history. "When first it was seen, it presented the usual aspect of a round misty spot, and by degrees threw out a tail, which was never very long or brilliant, and which, to the naked eye or in a low-magnifying telescope appeared like a narrow straight streak of light, terminating in a bright head, which in a telescope of small power appeared capped with a kind of crescent, but in one of great power exhibited the appearance of jets, as it were, of flame or rather luminous smoke, like a gas fan-light. These varied from day to day, as if wavering backwards and forwards, and as if they were thrown out of particular parts of the internal nucleus or kernel, which shifted round to and fro, by their recoil, *like a squib not held fast.* The bright smoke of these jets, however, never seemed to be able to get far out towards the sun, but always to be driven back and forced into the tail as if by the action of a violent wind setting against them—always *from* the sun,—so as to make it clear that this tail is neither more nor less than the accumulation of this sort of luminous vapour, darted off *in the first instance* TOWARDS the sun, as if it were something

raised up, and as it were exploded by the sun's heat, out of the kernel, and then immediately and forcibly turned back and repelled *from* the sun. As this comet approached the sun, its tail, far from increasing, diminished; and between the middle of November and the 21st of January, strange to say, both head (that is *coma* or hair) and tail were altogether destroyed, or at least rendered invisible. On the 21st of January, the comet was actually seen like a small star without any tail or any haziness, and was only known *not* to be a star by being exactly in its calculated place, and by its not being there next night. After that its head seemed to form again round this star, and grew rapidly and visibly from night to night, putting on appearances which could not be clearly apprehended without elaborate figures. This growth of the comet was so very rapid, that in this interval of 17 days from the time I first saw it as a round body its real bulk had increased to 74 times the size it then had, and at the same rate it continued to swell out, not, however preserving its round form, but growing larger in proportion to its breadth, as if it intended to develop a new tail. But this it never did,—the dilatation or swelling out continued, and at one time it had exactly the appearance of a ground glass lamp,—the light always becoming fainter and fainter, till at last it seemed to pass away from view from mere faintness. All this while, however, there was a sort of smaller and much brighter *interior comet* visible, with a tail-like appendage, which seemed to be, as it were, a conducting channel by which the matter of the newly forming head was gradually retreating back from the centre."

But besides this power of repelling matter which has been raised from a comet's head, the sun possesses apparently a selective power, enabling him to repel some matter at a greater rate than other matter thus raised. This was very strikingly shown in the case of the great comet of 1858, called Donati's comet. This comet appeared under circumstances very favourable for the complete study of the changes which took place as it approached and then passed away from the sun's neighbourhood. It was first seen on June 2, 1858; but it was not until August 14 that it began to throw out a tail. On the 16th of September the tail, which by this time had become very conspicuous, showed signs of curvature, and the curvature "continued to increase as the tail extended in length, until" at length the comet "assumed that superb aigrette-like form, like a tall plume wafted by the breeze, which has never probably formed so conspicuous a feature in any previous comet." This curvature must not be regarded as due to any resistance experienced by the tail in passing through the æther of space; for it is known that the medium occupying all space must be very much rarer, we may almost say, infinitely rarer, than such a supposition would imply. It is a direct conclusion, from the curved shape of the tail, that it was thrown out with a measureable and not with an infinite velocity. Now, this would have been sufficiently instructive even if the comet had presented no other remarkable appearance. For since ordi-

narily a comet's tail shows no such marked curvature, it follows that the matter forming the tails of different comets is repelled by the sun's action with varying energy. But Donati's comet showed in an even more significant way the selective power of the sun's repulsive action. For it had two straight tails besides the chief curved one. From the 28th of September to the 11th of October, the observers in America (where the comet was more favourably seen than in England) could recognize two narrow straight tails, "starting from the main tail on its anterior or preceding side (that towards which the comet was advancing, and which side was always the brightest, sharpest, and best defined), in the direction of tangents to its curvature at points very near the head, and extending on some nights (on the 4th, 5th, and 6th of October) to a much greater length than the primary or more luminous tail." These appearances indicate unmistakably an analysis of the cometic matter by the sun's repulsive action, "the matter of the secondary tails," as Sir John Herschel well remarks, "being evidently darted off with incomparably greater velocity (indicating an incomparably greater intensity of repulsive energy) than that which went to form the primary one. The primary tail," he proceeds, "also presented another feature, frequently, indeed almost always observed in comets, viz., its separation behind the head into two main streams with comparative darkness between them. This would be a natural and necessary optical consequence of the tail consisting of a hollow conical envelope, streaming off on all sides round the head, and presenting to the eye therefore a much greater thickness of luminous matter at its edges than in its middle. But in this comet the separation, when viewed through powerful telescopes, was singularly sharp, and appeared as a clear narrow straight cut or dark chink, originating close to the nucleus (as, indeed, on that explanation of the fact it ought)."

Now, Donati's comet also presented very striking, though not unusual appearances and changes of appearance in its head or rather in its *coma*. "Like all large comets, Donati's," I remark in my 'Orbs Around Us,' "when studied with powerful telescopic means,* showed a capping or envelope of light around the bright central nucleus." This envelope was separated by a dark interval from the nucleus; but a connection could be traced between the two in the form of jets of light which seemed to issue from different parts of the nucleus, "giving rise," says Sir John Herschel, "by their more or less oblique presentation to the eye, to exceedingly varied appearances — sometimes like the spokes of a wheel or the radial sticks of a fan, sometimes blotted by patches of irregular light, and sometimes interrupted by equally irregular blots of darkness." A month and a half after the first appearance of the tail, the nucleus was seen to be sur-

* The telescope employed by Professor Bond, of America, was a fine refractor, 15 inches in aperture, similar in all respects to the celebrated Poulkowa refractor, and to the fine telescope which is generally called the Great Equatorial of the Greenwich Observatory.

rounded by no less than three distinct envelopes, each of the two outer being related to the next inner envelope in the same way that the innermost was related to the nucleus; that is, there was a dark intervening space crossed by radial streaks of light. Professor Bond considered that these "had been thrown off in intermittent succession, as if the forces of ejection had been temporally exhausted, and again and again resumed a phase of activity; the peculiar action by which the matter of the envelopes was ultimately driven into the tail, taking place, not on the surface of the nucleus, but at successively higher levels." But Sir John Herschel considered rather that the matter forming the envelopes was, as it were, *sifted* "by solar action—the *levitating* portion of it being hurried off, the *gravitating* remaining behind in the form of a transparent, gaseous, non-reflective medium."

It was only a few days after the formation of these three envelopes that one of the straight tails first made its appearance beside the main or primary tail. Soon after, another tail, similar in its general appearance, but somewhat fainter, was discerned. The coincidence in point of time between the appearance of these new tails and the formation of the additional envelopes is a very noteworthy circumstance. The three envelopes were first seen on the 24th September, and they remained visible until the 10th of October. The new tails were first noticed on the 28th September, as though some little time had been occupied in their formation from the matter of the outer envelopes, and they continued visible till the 11th of October, or one day longer than the envelopes, as though some interval were required for their dissipation. This circumstance seems highly significant, more especially when it is considered in connection with the condition of the head during the continuance of the triple envelope. For during this interval, "and especially," says Herschel, "from the 7th to the 10th of October—that is to say, when the full effect of the sun's perihelion action had been endured—the nucleus offered every appearance of most violent and, so to speak, angry excitement, evidenced by the complicated structure and convolutions of the jets issuing from it." "From this time," he adds, "until the comet's final disappearance, the violence of action gradually calmed down, while the comet itself went southwards, and at length vanished from our horizon."

But besides comets like Donati's, whose interior economy can be readily studied on account of the vastness of their dimensions, there are small comets whose history is equally instructive, though in another way. These are the "comets of short period."

The first comet of short period discovered by astronomers was that now known as Lexell's comet. It was detected in the year 1770, and its motions having been submitted to calculation, the unexpected result was obtained that the comet was found to be moving in an orbit of moderate eccentricity, extending slightly beyond the orbit of Jupiter and having a period of about $5\frac{1}{2}$ years. On the next return the comet was unfavourably placed for observation, but when it should have returned, in 1781, to a part of the

heavens where it should have been well seen, it was looked for in vain. "The solution of the enigma," says Sir J. Herschel, "was a very strange one. The poor comet had got bewildered. It had plunged headlong into the immediate sphere of Jupiter's attraction,—had intruded, an uninvited guest, into his family circle,—actually nearer to him than his fourth satellite, and into a situation where Jupiter's attraction on it was 200 times that of the sun. Of course its course was for a time entirely commanded by this new centre of motion, and the comet was completely diverted from its former orbit." But now a new question was suggested. Seeing that the comet was not an inconspicuous object when discovered in 1770, and was then travelling in a period of 5½ years, how did it chance that it had not before been seen? The answer was as strange as the explanation of the comet's disappearance. It was found that the same mighty planet which had sent the comet away had introduced the comet to the sun's neighbourhood. Jupiter's period of motion is about 11 years and 10 months; two revolutions of the comet amount to 11 years 3 months. Accordingly, tracing the comet back two revolutions in its oval path, and Jupiter one revolution in its nearly circular path from the place of their final rencontre, which took place in 1779, it is clear that they could not have been far asunder in 1767, three years before the comet became visible; and in fact, on executing the calculations necessary, it was clearly proved that before 1767 this unhappy comet had been revolving in a totally different orbit of much greater dimensions, and was actually seized upon then and there by Jupiter, flung, as it were, inwards, —and then, after making two visits to the sun, again seized on and thrown off into space into an orbit of 20 years' period, where, perhaps, it may be quietly circulating to this day." Another circumstance in this "strange eventful history" remains to be noted. The comet passsd, as already mentioned, through the system of Jupiter's satellites. Now, as Sir J. Herschel remarks, "the motions of these bodies have been studied with a degree of care and precision quite remarkable by reason of their furnishing one of the means for ascertaining the longitudes of places. And if the comet had been a heavy massive body, its attraction must have produced some sensible disturbance in their motions. But not a trace of anything of the kind was detected. One and all of them pursued their courses with the very same precision and regularity as if nothing had happened. The conclusion is irresistible. *That* comet, at least, had no sensible weight or mass —it was a mere bunch of vapours."

Another comet, whose history has been even more remarkable, is that called Biela's, and sometimes the Lost Comet. The history of this comet is, however, deferred for a brief space so that the subject of meteors may be brought up to the point where the association between meteors and comets is illustrated by events connected with it.

For many ages meteors were supposed by most persons to be atmospheric phenomena, due to some process in the higher regions

of air, resembling that by which lightning is caused to appear in the lower atmospheric strata. But one circumstance among meteoric phenomena led thoughtful men to perceive that these objects must have an extra-terrestrial origin. This was the occurrence of meteoric showers on particular days of the year. If we consider what is meant by a particular day of the year, we shall see why such a conclusion was forced, as it were, upon men of science. On a particular day of the year the earth is at a particular part of her orbit, and therefore the recurrence of meteoric showers on a particular day of the year implies that as the earth traverses a particular part of her orbit, meteoric downfalls occur. Now we may illustrate the significance of this circumstance by comparing it to the case of a traveller who, going often along a certain road, should note that, at a certain point of that road he was saluted with a shower of missiles. He would conclude that at that point of the road there were persons (schoolboys, for example) who, for amusement or other reason, threw stones across the road, whether with or without the intention of striking him. Now there are no persons throwing stones at the earth as she crosses the part of her orbit corresponding to the date August 10–11, and November 13–14, but inasmuch as she is very commonly saluted with a shower of meteors at those particular stages of her orbit, we must assume that those two regions (to mention no others) of the solar system are, as it were, infested with the bodies which produce meteoric displays. In fact we must assume that as the earth comes to those parts of her path, she passes through a cloud of small bodies, which as they pass through her atmosphere become incandescent, and so appear as falling stars.

This is not a mere hypothesis or speculation, it is simply the only rational way of accounting for the observed fact.

Now we cannot for a moment imagine that there are clouds of meteoric bodies at rest in these positions. Such bodies are necessarily exposed to the sun's attraction, and if a cluster of meteors were simply *placed* there, it would in a few days be drawn to the sun, and brought to rest upon his glowing surface. Yet meteors are always very numerous in those regions. The inference is then similar to that which would be formed by a traveller who should always find running water at a particular spot. He would know that the water he found there one day could not possibly be the same that he found there on another day; but he would be assured that a stream of water flowed there: nor would the inference be shaken though at some other season,—as in summer, for example,—he found that the bed of the stream was dry. Astronomers infer, in fact, with the utmost confidence, that there are meteor streams crossing the earth's track at the points which she passes on August 10–11, and November 13–14; and their conclusion is not shaken by the circumstance that in some years there is no shower when the earth arrives at these parts of her orbit: this merely proves that the stream is intermittent.

This conclusion is confirmed by another circumstance equally convincing. If the earth were several hours in traversing a stream of meteors all moving in the same direction, it is manifest that the meteors would all seem to enter her atmosphere in the same direction as regards space,—that is, considering the earth as she really is, girt round on all sides by the distant star-sphere, all meteors would seem to enter her atmosphere as if from the same stellar region. But as the earth herself would be turning round on her axis during the hours of passage through the meteor-stream, the falling meteors would not seem to come from the same terrestrial quarter. Thus, if at one epoch they seemed to come from the east, and from a height of fifty degrees above the horizon, then an hour or two later they would seem to come from a different quarter and from a different height. Here, then, is a crucial test for the theory that shooting-stars reach the earth from without; for, in that case, and in no other conceivable case, the relation just described will be recognized. Now, as a matter of fact, this relation is recognized, and in so marked a degree, that meteor systems are often named from the constellations whence the meteors of the system appear to proceed. Thus, the meteors belonging to the system which produces the showers of November 13–14, are often called the Leonides, because they appear to issue from the constellation Leo. In like manner, the meteors of August 10–11 are called the Perseides, because they appear to proceed from the constellation Perseus. And similarly with other meteor systems.

The circumstance here considered affords of itself a sufficient and complete proof of that which had already been sufficiently and completely demonstrated—the fact, namely, that meteors have an extra-terrestrial origin.

But next we come to a feature of meteoric systems which is even more interesting.

It has been noticed that the November meteor-shower waxes and wanes in splendour in a period of about thirty-three years. And so soon as it had been proved that this shower proceeds from a meteor-stream travelling around the sun, the natural inference was that the period of revolution amounts to about thirty-three years; so that at intervals of this length the richest part of the stream is brought to the neighbourhood of the earth's orbit. But some difficulty was found in the admission of this view, because a period of thirty-three years implies an orbit having a mean distance equal to about ten times the earth's, and, therefore, since a part of the orbit is as near to the sun as the earth, the opposite part must be nineteen times as far from the sun, and this would throw the most distant part of the orbit beyond the path of the most distant planet Uranus.

But a discovery made by Schiaparelli, respecting the August meteors, caused astronomers to look with more approval on a theory which, at first sight, appears very startling.

It was noticed by Schiaparelli that the comet of the year 1862 crossed the earth's orbit close to the spot where she en-

counters the August meteors. He was led, therefore, to inquire whether the course of the comet resembled that which those meteors follow. He assumed, for the purpose of this inquiry, that the August meteors have a period equal to that of the comet —about 145 years. The assumption assigned a certain real velocity to the August meteors ; and therefore, from the observed direction of their apparent motions, their real course as they enter our atmosphere could be determined. Now, when this was done, it was found that this course agreed perfectly with the course which the comet of 1862 pursued as it crossed the earth's orbit. The coincidence satisfied Schiaparelli that the August meteors do actually pursue the same path around the sun as the comet of 1862, and are in some way associated with that comet.

This conclusion removed the only difficulty which had seemed to oppose the assumption that the November meteors travel around the sun in a period of 33 years. Adopting this assumption, their complete orbit was easily determinable. Leverrier and Schiaparelli, making the requisite calculations, assigned to the November meteors a course which, in its most distant portion, passes not very far from the orbit of the planet Uranus.

But in the meantime our great English astronomer, Adams, had accomplished a far more difficult task. Leverrier and Schiaparelli, *assuming* that the November meteors have a period of 33 years (more exactly $33\frac{1}{4}$ years), had shown that they follow such and such an orbit ; Adams proved that they *have* a period of $33\frac{1}{4}$ years.

The method of inquiry adopted by Professor Adams cannot be described in these pages. But its general course may be indicated as follows :—The November shower has been, year by year, later by a small amount. Comparing the earliest accounts, of more than 900 years ago, with the latest, it is found that the change of date corresponds to a certain slow shifting of the place where the meteor stream crosses the earth's path. Such a shifting is a familiar phenomenon to the astronomer in the case of planetary motions. It is caused by the *perturbing* action of the planets. Now according to the shape of the path of the November meteors, the planetary perturbations will be greater or less. To account for the waxing and waning in a period of $33\frac{1}{4}$ years we must assume either a period of $33\frac{1}{4}$ years with a certain orbit, or else a period exceeding or falling short of a year by a thirty-third part, with corresponding orbits, or else a period slightly exceeding or falling short of half a year. Professor Newton, of America, was the first to show that there are only these five possible solutions of the period question. Now Adams took the orbits corresponding to these several periods, and carefully estimated the nature and amount of the perturbing effects to which the meteors would be exposed, on these several hypotheses. He found that for all the last four cases the perturbations would be very much less than the actually observed retardation indicates. He then took the case of a period of $33\frac{1}{4}$ years, a much more difficult problem, owing to the great eccentricity of the resulting orbit. Investigating

this case with singular ingenuity and completeness, he found the whole perturbation of the meteor system accounted for. Having on this assumption an orbit extending far out into the interplanetary spaces, the meteors are brought under the disturbing influences of Jupiter and Saturn, the giant members of the solar system, besides the influence, sometimes even greater (owing to greater proximity) of Uranus. Thus the change in the position of the November meteor system was shown to require the extended orbit which had long been rejected by astronomers.

But the strange history of discovery does not end here. So soon as the orbit of the November meteors had been assigned by Leverrier and Schiaparelli, and demonstrated by Adams, the inquiry naturally arose whether the November meteor system like the August system was associated with any known comet. Now no conspicuous comet travels in a period of $33\frac{1}{4}$ years, and singularly enough no small comet even had been discovered which revolves in such an orbit, until the very year in which the inquiry into the orbit of the November meteors was brought to so successful a termination. But early in 1866, a comet was detected by Tempel which has such a period; and the path of this comet had already been calculated when Leverrier and Schiaparelli announced their result. Another astronomer, Peters, making search for a comet moving in a similar orbit, found Tempel's comet ready to hand; and on a comparison of the two orbits it was found that they are to all intents and purposes identical!

After this, other meteor systems were examined, and although complete identification has not been in every instance found possible, as in the exceptional cases of the November and August meteors, yet satisfactory evidence has been obtained of the association of several known meteor systems with known periodic comets. The evidence would, indeed, not be sufficient if proof positive had not been obtained in the cases already mentioned. But now that it has been demonstrated that an association exists between certain meteor systems and certain comets, a much less complete degree of evidence suffices in the case of other systems. Accordingly it has been judged sufficient proof of association that certain comets cross our earth's orbit in the same place and in the same direction as the meteors of such and such known systems.

Moreover, it is now regarded as highly probable that every meteor system is associated with a comet, and in turn that every comet is followed by a flight of meteoric bodies forming a more or less extended train.

The next circumstance to be related affords a remarkable illustration of the soundness of the evidence on which these views are based.

I have spoken of Biela's comet called also the Double Comet and the Lost Comet. It was discovered in February 1826 by the astronomer whose name it bears; and was found to travel in an orbit of moderate dimensions, carrying it when farthest from the sun to a distance somewhat exceeding that of Jupiter. It belongs, in fact, to a family or group of comets distinguished by the pecu-

liarity that their paths pass very close to that of Jupiter. So carefully was Biela's comet observed in 1826 that it was found possible to trace back its course through former revolutions with sufficient accuracy to determine whether it had been before observed. When this was done, it was found that the comet had been seen on March 8, by Montaigne at Limoges, and again by Pons on November 10, 1805. Santini and Damoiseau assigned November 27, 1832, as the date of the comet's return to its nearest point of approach to the sun. Olbers confirmed this result, showing, moreover, that the comet's course would be within 20,000 miles of the earth's orbit. Sir J. Herschel remarked on this (in 1866), "The orbit of Biela's comet very nearly indeed intersects that of the earth in the place which the earth occupies on or about the 30th of November. If ever the earth is to be swallowed up by a comet, or to swallow up one, it will be on or about that day of the year. In the year 1832, we missed it by a month. The head of the comet enveloped that point of our orbit; but this happened on the 29th of October, so that we escaped that time. Had a meeting taken place, it is probable, from what we know of comets, that no harm would have happened, and that nobody would have known anything about it."

In 1839, the comet returned but was not seen, owing to the position of the sun at the time when the comet was in our neighbourhood. At the next return, in 1845-46, it was recognized very early, and now one of the most singular events recorded in the history of comets took place. "All seemed," as Sir J. Herschel wrote, "to be going on quietly and comfortably in 1846, when behold! suddenly on the 13th of January, the comet split into two distinct comets! each with a head and coma and little nucleus of its own. There is some little contradiction about the exact date. Lieutenant Maury of the United States Observatory of Washington, *reported officially on the* 15*th*, *having seen it double on the* 13*th*; but Professor Wichman, *who saw it double on the* 15*th*, *avers that he had a good view of it on the* 14*th*, and remarked nothing particular in its appearance. Be that as it may, the comet from a single, had become a double one. What domestic troubles caused the secession it is impossible to conjecture; but the two receded farther and farther from each other, up to a certain moderate distance, with some degree of mutual communication, and a very odd interchange of light, one day one head being brighter and another the other, till they seemed to have agreed finally to part company. The oddest part of the story, however, is yet to come. The year 1852 brought round the term for their reappearance, and behold! there they both were, at about the same distance from each other, and both visible in one telescope."*

In 1858 the comet probably returned, but it was not seen, for the same reason as in 1839. In 1866, however, it should have been well seen. Yet the region along which, according to the calculations of astronomers, it should have pursued its course,

* Other details respecting this comet will be found in the Second Series of my "Light Science for Leisure Hours."

was searched in vain. "It is now overdue!" Sir John Herschel wrote in February, 1866. Its orbit has been recomputed, and an ephemeris calculated. Astronomers have been eagerly looking out for its reappearance for the last two months, when, according to all former experience, it should have been conspicuously visible, but without success! giving rise to the strangest theories. At all events, it seems to have fairly disappeared, and that without any such excuse as in the case of Lexell's, viz., the preponderant attraction of some great planet. Can it have come into contact or exceedingly close approach to some asteroid as yet undiscovered; or peradventure plunged into and got bewildered among the ring of meteorolites, which astronomers more than suspect?"

In the autumn of 1872 the comet was again due in our neighbourhood. And again it was searched for diligently, yet in vain. But in the meantime the association between meteors and comets had been recognized, and it occurred to astronomers that as this comet crossed the earth's path (or very near it) late in August, or early in September, 1872, a considerable display of meteors might be expected during the last week in November, when the earth would cross the place where the comet had passed her orbit. For since the meteors of November 13–14 have been seen, not merely a few months, but several years after the passage of *their* comet, it seemed not unreasonable to expect a considerable meteoric display at a passage occurring only ten or twelve weeks after the comet's visit. It will probably be in the remembrance of all our readers that on November 27, 1872, the anticipated display of meteors did actually occur. It was a remarkable shower. The meteors were even more numerous than during the memorable shower of the night between November 13–14, 1866; though they were not so large on the average as those seen on the latter occasion. Moreover, no question could exist as to the reality of the connection between the meteoric shower and the missing comet, since the meteors came from that part of the heavens, precisely, whence it was calculable that bodies following the track of Biela's comet *would* have come.

But this was not the end of the remarkable story of Biela's comet.

It occurred to the German astronomer Klinkerfues that if search could be made in the part of the heavens directly opposite to that whence the meteor shower seemed to proceed, the cluster of meteoric bodies which had produced the display might be detected. He telegraphed accordingly to Mr. Pogson, of the Madras Observatory, "*Biela touched earth on November* 27; *search near Theta Centauri*;" Theta Centauri being the southern constellation opposite the northern star-region whence the meteors had appeared to radiate. Pogson, nothing loth, undertook the search, and not far from the place indicated he detected a cometic object. He saw this object again on the next day (in the early morning hours), when it had considerably shifted its

place in the heavens. He described it as "Circular, diameter 75″, bright nucleus, a faint but distinct tail 8′ in length, and spreading."

It may be supposed that astronomers at once recognized this object as the missing comet. But strangely enough it was found, from the observed position of the comet-like object, that it could be neither Biela's comet, nor the cloud of meteoric bodies through which the earth had passed. The conclusion arrived at by the most skilful astronomers was that it was a meteoric group following nearly in the track of the missing comet, and one of several such groups into which the comet train has, as it were, broken up. If there was any association between the group through which the earth passed on November 27, and that particular cloud which Pogson saw, then the cloud must have been the denser part of a meteor group through the extreme outskirts only of which the earth had passed.

Nothing could be more complete than the demonstration of the theory that meteors and comets are, in some as yet unexplained way, associated with each other. It remains for us to inquire into the nature of comets and meteors, so far as the available evidence will permit.

In the first place, I will quote the account given by Sir John Herschel, of the actual behaviour of the comet of 1862, which, as we have seen, is associated with the August meteors. After noting the circumstances under which this comet came into view, Herschel remarks that "it passed us closely and swiftly, swelling into importance, and dying away with unusual rapidity. The phenomena exhibited by its nucleus and head were on this account peculiarly interesting and instructive, it being only on very rare occasions that a comet can be closely inspected at the very crisis of its fate, so that we can witness the actual effect of the sun's rays on it. In this instance, the pouring forth of the cometic matter from the singularly bright and highly condensed nucleus, took place in a single compact stream, which, after attaining a short distance, equal to rather less than a diameter of the nucleus itself, was so suddenly broken up and dispersed as to give, on the first inspection, the impression of a double nucleus. The direction of this jet varied considerably from day to day, but always declined more or less from the exact direction from the sun." It seems far from improbable that what was here witnessed represented the actual generation of new August meteors, and that at some more or less distant epoch portions of the matter thus swept away from the comet of 1862 may take their part in producing a display of falling stars.

The spectroscopic examination of the light of comets, has taught us that a portion, at least, of the head of a comet is luminous gas, and it would even seem that carbon exists in the vaporous form and in a luminous state in certain comets, for a singularly close agreement has been observed between the spectrum of this element and that given by two comets.

But the evidence derived in this way from comets is at present

not altogether satisfactory, and we must wait until some large and brilliant comet has been submitted to careful spectroscopic examination.

Ordinary falling stars, again, are not very readily examined with the spectroscope, because of their brief continuance and rapid motions. Nevertheless, it has been found possible during rich meteoric showers to apply spectroscopic analysis; and this singular result has been obtained by Professor Alex. Herschel:—It has been found that a large proportion of the August meteors shine in great part with the light of glowing sodium vapour; in fact Professor Herschel describes their condition as resembling that of a spirit lamp whose flame is largely dosed with moistened salt. (For sodium, it must be remembered, is the metallic element of our common salt). Other substances, as magnesium, potassium, &c., have been inferred as existing in the substance of shooting stars, because of the position and colour of the lines seen in their spectra. But it need hardly be said that any exact determination is altogether out of the question.

It is to another kind of meteor, therefore, that we must turn for information. There can be no doubt that shooting-stars are of the same nature as fireballs, though different in size. And fireballs or bolides are of all orders of magnitude up to masses so large that they fall either in a single mass, or in fragments (after explosion) upon the surface of the earth. Such masses admit of being examined chemically, microscopically, and otherwise, and thus supply information, indirect, certainly, but still the most satisfactory information available, respecting the meteoric bodies which follow in the trains of comets.

Now the information thus obtained respecting meteorites or aërolites has proved singularly interesting.

In the first place, Sorby, of Sheffield, the eminent meteorologist having examined the substance of several meteorites microscopically, found reason to believe that originally the material of aërolites was "in a state of fusion." "The most remote condition," he says, "of which we have any positive evidence, was that of small detached melted globules, the formation of which cannot be explained in a satisfactory way, except by supposing that their constituents were in the state of vapour as they now exist in the atmosphere of the sun; and on the temperature becoming lower condensed into these ultimate cosmical particles. These afterwards collected into larger masses, which have been variously changed by subsequent action, and broken up by repeated mutual impact, and often again collected together and solidified." It is evident that Sorby regards meteorites as having either been extruded from the sun, or from one of its fellow suns, the stars, at some far distant epoch, or else as having been formed at a time when the greater part of the matter forming our solar system was in an intensely heated state as the sun's interior now is.

Now, if meteors were expelled from below the surface of sun or star, one might expect that chemical as well as microscopical

traces of their origin would be recognised. If we suppose for instance that the hydrogen of the solar eruption-prominences* is to be compared with the smoke which rushes from the mouth of a cannon, volleys of meteors being the missiles, then, as I point out in my "Orbs around us," it is probable "that these meteors would show some sign of having been originally surrounded by intensely hot hydrogen existing at an inconceivably enormous pressure." It has been established by the researches of chemists, and specially by those of the late Professor Graham, that iron solidified under such conditions would condense within its substance a considerable proportion of hydrogen. Since, then, meteorites contain always a large quantity of iron, the question suggests itself whether that iron shows any signs of having been surrounded by hydrogen when as yet the metal had not solidified. The answer comes in no doubtful terms. To Professor Graham himself we owe the examination of meteoric iron and the definite enunciation of the conclusions warranted by his prior researches. He examined a piece of the meteoric iron of Lenarto, which, says Mr. Mattieu Williams, has been shown by the analysis of Werle to consist of 90·883 parts of iron, to 8·450 parts of nickel, 0·665 of cobalt, and 0·002 of copper. When a volume of 5·78 cubic centimètres of this iron was heated to redness, "gas came off rather freely; namely, in thirty-five minutes 5·38 cubic centimètres, in the next one hundred minutes 9·52, and in the next twenty minutes 1·63 cubic centimètres"—in all, in rather more than two hours and a half, no less than 16·53 cubic centimètres, or about three times the volume of the iron itself. "The first portion of the gas collected," says Professor Graham, "had a slight odour, but much less than the natural gases occluded by ordinary hydrogen. It did not contain a trace of carbonic acid." The second portion of gas collected (consisting of 9·52 cubic centimètres) gave of hydrogen 85·68 parts per cent., the rest consisting of nitrogen and carbonic oxide. "The Lenarto iron appears, therefore, to yield 2·85 times its volume of gas," says Graham, "of which 86 per cent. nearly is hydrogen, the proportion of carbonic oxide being so low as 4½ per cent." But "the gas occluded by iron from a carbonaceous fire is very different, the prevailing gas then being carbonic oxide. For comparison a quantity of clean horse-shoe nails was submitted to a similar distillation." This metal gave 2·66 times its volume of gas; the first portion collected contained only 35 per cent. of hydrogen, 50·3 per cent. being carbonic acid, and 7·7 per cent. carbonic acid, and 7 per cent. nitrogen; the second portion gave no carbonic acid, but 58 per cent. of carbonic oxide, and only 21 per cent. of hydrogen. The contrast between these results and the former is very marked. But let us hear Professor Graham's own reasoning on the subject.

"It has been found difficult," he says, "to impregnate malleable iron with more than an equal volume of hydrogen under the

* See the "Companion to the Almanac for 1873," and for fuller information my treatise on "The Sun."

pressure of our atmosphere. Now the meteoric iron (this Lenarto iron is remarkably pure and malleable) gave up about three times that amount without being fully exhausted. The inference is that *the meteorite has been extruded from a dense atmosphere of hydrogen gas*, for which we must look beyond the light cometary matter floating about within the limits of our solar system." . . . "Hydrogen has been recognised in the spectrum analysis of the light of the fixed stars by Messrs. Huggins and Miller. The same gas constitutes, according to the wide researches of Father Secchi, the principal elements of a numerous class of stars, of which *a* Lyræ is the type. *The iron of Lenarto has no doubt come from such an atmosphere, in which hydrogen greatly prevailed. This meteorite may be looked upon as holding imprisoned within it, and bearing to us the hydrogen of the stars.*"

Now, when we combine this evidence with what we know respecting the solar eruptions, and with the evidence we have already obtained respecting the repulsive power which the sun exerts upon cometic substance, the theory is suggested, that for the most part the larger comets, those, at least, which visit us on a course implying that they have traversed the interstellar spaces, have been expelled from the stars at some exceedingly distant epoch. We may conceive that the processes at work at the present day represent only the residue, as it were, of the activity by which, in past ages, the sun expelled cometic matter from his interior. For if the comets which visit us from interstellar space were originally star-expelled, they must have occupied millions of years in traversing the wide distances which separate our system even from the nearest of the fixed stars; and we seem compelled to assume that in most cases many interstellar journeys have been made by each comet, and that, therefore, we must set back the era of their birth very many millions of years. If our own sun's comet-forming era was correspondingly remote, it seems reasonable to assume that the greater portion of his comet-forming activity has been already dissipated.

Nevertheless, it is well to notice that even now he possesses eruptive energy sufficing to carry matter altogether away from him, that is to say, sufficing to overcome the mighty attractive energy of his own mass. It is only necessary to read the accounts of some of the remarkable solar eruptions witnessed during the last few years to perceive that this is the case. But, we may inquire whether there is any other evidence bearing on this point. It is hardly necessary to remark that ordinarily, matter expelled from the sun would either pass away for ever into space, or would return to its parent orb precisely as a stone flung into the air falls back upon the earth. But some portion of the expelled matter—meteoric in character we may assume—would encounter our earth; and thus there would be a certain number of sun-expelled meteorites over and above those which reach the earth from outer space. Now, any sun-expelled meteorite could only fall upon the side of the earth turned

towards the sun at the moment that the meteorite fell,* in other words, such a meteorite could only fall in the day-time, and thus there would be, on the whole, a preponderance of meteorites falling during the hours of the day, and especially of mid-day, as compared with those falling at night. It is somewhat remarkable, considering how apt meteorites falling in the day time would be to escape notice (because not showing as bright objects on a dark sky, but lost in the solar glare), that according to Humboldt, more meteorites fall in the mid-day hours than at any other time.

But let us return to meteor-systems properly so-called.

We have seen that these systems follow in the track of comets of known period,—comets, therefore, which return to our earth's neighbourhood at definite intervals. In the case of the comet of the November meteors the interval is not a very long one, being only a third of a century; while in the case of Biela's comet the period is yet shorter, being less than six years. These comets, therefore, do not at present follow tracks extending through the interstellar spaces. They *may* have been expelled from stars, and after following paths extending from the remotest star-depths, they may have passed so near to one or other of the four giant planets Jupiter, Saturn, Uranus, and Neptune, as to be compelled to travel on their present closed orbits. There is indeed some evidence in favour of this supposition. It is clear that if a comet were thus, as it were, captured by a giant planet, that is, not compelled to travel round the planet, but forced by the planet to travel in a closed orbit round the sun, then the comet would in its new orbit continually return to the place where it had been so captured. For, of course, a body moving in an orbit continually returns to every point of the orbit, and therefore, to the point where it was first set moving in the orbit. Perturbations would indeed in the course of time affect this relation to some degree; yet still some traces of it would remain in a more or less close approach of the comet to the orbit of the disturbing planet. Now, it is the fact, that all the comets of short period have paths which either actually pass very close to the path of some one or other of the giant planets, or else have paths which are such as could be derived by perturbations from paths so approaching. Thus, Jupiter has a family of comets; Neptune another; and Saturn and Uranus have each a comet so depending upon their orbits. This, too, refers only to discovered comets; and we know, quite certainly, that for every discovered comet of any planet's family there must be thousands which could never be discovered from our earth, and hundreds, which though discoverable, have not hitherto been discovered.

There are, however, some difficulties in the way of this explanation; particularly in the case of the minor giants, Neptune and

* The mistake is very commonly made of supposing that the meteorite would fall on the face of the earth which *had been* turned towards the sun at the moment when the meteorite started. But a little consideration will show that it is the moment of the meteorite's fall that has alone to be taken into account. The meteorite must arrive at that side of the earth which is turned towards it *when* it arrives.

Uranus. It can easily be shown that for a comet arriving from the interstellar spaces to be captured by one of these planets the approach must be singularly close, and the comet must be in a very compact state to be captured bodily. Considering the enormous dimensions of the orbits of Neptune and Uranus it must be regarded as a truly wonderful coincidence that any comet arriving from outer space should make so near an approach as would unquestionably be required.

We are thus led to inquire whether possibly the comets of short period, and therefore the periodic meteor-systems, may not have had a different origin. We have seen that in all probability the comets of long period have been expelled from stars—that is, from other suns than ours. May it not be that the comets of short period have been expelled from those minor suns which astronomers are beginning to recognise in the giant planets of the solar system, either as these planets now exist or in past stages of their existence.

It must be remembered that the relative expelling powers of minor and major suns are not in question; for although doubtless an orb like Jupiter or Saturn would have very much less power to expel matter than an orb like our sun, yet very much less power would be required. The sun in expelling matter has to overcome the attractive energy of his own mass; a planet would have only to overcome its own much smaller attractive energy. If we grant only that the giant planets are in a semi-sun-like state now, or even that in a former era of their existence they were as minor suns, we need but regard the sun-like character as including a power of expulsion corresponding to that which astronomers recognise in our own to see in the major planets the possible parents of comets. Such comets would be small, and all the recognised comets of short period *are* small with one exception—Halley's comet. And this exception is the kind of exception which proves a rule, as will presently appear.

Now there is one test by which the two theories here described can be tried. If a comet arriving from interstellar space were captured by the attraction of a giant planet, the new orbit would be as likely to be greatly inclined as to be but little inclined to the orbit of the capturing planet. Moreover the comet would be as likely to travel backwards as forwards* in the new orbit. But a comet expelled from one of these planets, inasmuch as it would partake in the forward motion of its parent comet, having this motion *as well as* whatever motion might be given to it when expelled, would be more likely to move forwards than backwards and to move near the level of the parent planet's orbit, than at a considerable inclination thereto. If the motion given in expulsion were always less than the motion of the planet in its orbit, then not a single expelled comet would travel backwards; for even if propelled directly backwards there would remain a balance

* The direction in which the planets move round the sun is called "direct" or "forward," and the contrary direction is called "retrograde" or "backward." All the planets move the same way, and all the satellites, except the satellites of Uranus, move the same way round their primaries, as the primary planets round the sun.

of forward motion. If a comet were expelled with such motion in a direction square to the level of the planet's path, the comet's orbit would be inclined less than 45 degrees to the plane of the planet's orbit.

Here, then, is a direct test between the two theories.* If the comets of short period show the same varieties of inclination, and of direction of movement, as the large comets which arrive from interstellar space, then the probability is that they also arrive from interstellar space. If, on the contrary, the comets of short period show a general tendency to forward motion and in paths not often very greatly inclined, then is the theory more probable that the comets of short period have been expelled from the planets on which they severally appear dependent. Now the application of this test gives no doubtful result. *All* the comets of short period travel forwards, except Halley's (the only large one as we have seen). Herschel wrote thus in 1866, long before this theory of mine that comets have been expelled from planets had been broached:—"The number of comets whose periodical return has been calculated is pretty considerable. Altogether about 36 (now nearly 50); and of these there are 5 (now 6) which revolve in periods of from 70 to 80 years, and several of the rest in short periods of from 3 to 7 years; and it is a very remarkable feature in their history that *all* the comets of short period, and 3 (it should be 4) out of 5 of those of the larger ones specified, revolve in the *same* direction round the sun as the planets, and have their orbits inclined at no very large angles to the ecliptic."

Then, again, we might expect that these comets, which are as it were dependent on Jupiter, the most swiftly moving of the giant planets, would show the peculiarities I have described in a more marked degree than those depending on the more slowly moving planets. The comparison depends on the inclinations; for, as we have seen, all the comets of that period (except one, which we have reason for regarding as not belonging to any comet family), travel forwards. Now, of the planets depending on Jupiter, one has an inclination of nearly 31 degrees, and the rest have inclinations all less than 15 degrees; whereas, of those depending on Neptune, all have inclinations greater than 19 degrees, and all but one have inclinations exceeding 40 degrees.

Thus, the evidence appears on the whole in favour of my theory, that the comets of short period have, in the main, been expelled from the giant planets of the solar system. In calling this my theory, I refer only to its suggestion by myself. I would not have it thought that I regard it as in any sense a theory which I *maintain*. Nevertheless, it is to be noted that there is but one other theory, and that a comparison based on the only evidence we have, favours the theory I have advanced. Moreover, the whole subject of cometic astronomy is so full of mysterious and wonderful relations, that we must not be disposed to reject a theory merely because it has a somewhat wonderful aspect. Indeed,

* This test was suggested to me by Prof. Herschel, one of the most eminent students of meteoric astronomy.

my theory, startling though it may seem, is not more startling than that which explains the larger comets as originally expelled from stars. Nor is either theory of a more surprising nature than the facts which have been fully ascertained respecting comets. The whole subject is wonderful and startling; we must not wonder if surprising explanations should be suggested by it. However, as yet our theories have been only suggested, not as yet in any sense demonstrated. We have still very much to learn respecting comets; and doubtless as we learn more we shall find it easier to deal with the theories which present themselves to us for consideration. For the present, my essay on the subject of comets and meteors must be limited to the indication of the direction in which ascertained facts seem to point. I shall have failed altogether in attaining the purpose I have had in view in the present essay, if the reader does not perceive that the investigation of the subject I have been dealing with promises to lead to results of the utmost interest in relation to the present condition and past history of our solar system, as well as to the processes to which that system will be subjected in ages to come.

R. A. Proctor, B.A.

UTILIZATION OF WASTE.

The "magic of science" is a phrase which has passed into the current commonplaces of conversation. It expresses a great truth. Fair Industry clad in these robes effects changes more wonderful than those performed by Prospero when he had donned his magic mantle. The wildest dreams of fairyland are tame in comparison with the actual wonders of to-day. Could one of the inhabitants of England who lived in "good King Charles's golden days" revisit his former abiding place, he would be in a land as full of unfamiliar wonders as though he were amongst those airy nymphs

> "That on the sands with printless foot
> Do chase the flying Neptune, and do fly him
> When he comes back."

The magic of science is more than a phrase. Its results meet us at every turn. Every stone in our great cities testifies to its transforming power. Our national industries and commerce depend upon its aid alone. Were we to blot out those pages which science has written in the book of history, man would once more be a wild barbarian, running naked in his native woods. The history of civilization is the history of science. To her transforming energy we owe the comforts and luxuries of our every-day life, and in nothing is this energy more strikingly manifest than in the transformation of substances considered to

be mere waste, destitute of all value, into things of use and beauty. There is no waste in Nature. Matter is indestructible, but passes through an endless cycle of change. In this wise economy there is a hint which has been eagerly seized by the man of practical science. In many processes of manufactures there are large quantities of matter thrown off, which are not available for the end in view. For a time these are simply nuisances to be got rid of as cheaply and as speedily as possible. Sometimes it may be they are actually harmful, in which case the need for an effectual method of disposing of them is all the greater. But by and by some ingenious person devises means by which this rubbish may be worked up into some useful product. There are few of our great manufactures now which have not one or more of these dependent industries attached to them. These secondary manufactures are all examples of one form of the utilization of waste. In some cases very important industries derive all their raw material from refuse substances. The paper trade, the alum trade, and the shoddy trade may be named as examples.

It is evident that when considered from the point of view of industrial science, the phrase utilization of waste may be fairly applied not only to the unused residual products of manufactures, but to the boundless undeveloped wealth of nature. The beautiful aniline dye, produced from the tar of the gas-works, is not more an example of the utilization of waste than beet-root sugar obtained from what a century ago, was a weed growing by the sea-side.

Dr. Lyon Playfair has well pointed out the action of chemical science in this direction :—

"Chemistry, like a prudent housewife, economizes every scrap. The horse-shoe nails dropped in the streets during the daily traffic are carefully collected by her, and re-appear in the form of swords and guns. The clippings of the travelling tinker are mixed with the parings of horses' hoofs from the smithy, or the cast-off woollen garments of the poorest inhabitants of a sister isle, and soon afterwards, in the form of dyes of brightest blue, grace the dress of courtly dames. The main ingredient of the ink with which I now write was possibly once part of the broken hoop of an old beer-barrel. The bones of dead animals yield the chief constituent of lucifer matches. The dregs of port wine, carefully rejected by the port-wine drinker in decanting his favourite beverage, are taken by him in the morning, as seidlitz powders, to remove the effects of his debauch. The offal of the streets, and the washings of coal-gas re-appear carefully preserved in the lady's smelling-bottle, or are used by her to flavour blanc-mange for her friends. This economy of the chemistry of art is only in imitation of what we observe in the chemistry of nature. Animals live and die : their dead bodies, passing into putridity, escape into the atmosphere, whence plants again mould them into forms of organic life : and these plants actually consisting of a past generation of ancestors, form our present food."

The Coal-Tar Colours

Are an interesting example of the influence which theoretical scientific research may exercise upon industry. They show also how each discovery leads to others in seemingly foreign fields. The connection between gas-lighting and the dying of textile fabrics is not very apparent, and yet some of the most beautiful dyestuffs are derived from the refuse of the gasworks. As early as 1826 Unverdorben discovered aniline, which he obtained from indigo. It was afterwards obtained from the waste tar arising from the destructive distillation of coal in the process of gas-making. Amongst the many products which result are Benzol, Phenol, and Aniline. These have all been applied to industrial purposes.

Benzol is used as a solvent for caoutchouc, and is known to most thrifty housewives as an agent in the restoration of the purity of grease-stained articles. From phenol is derived the beautiful yellow dye known as carbazotic acid.

Aniline is, however, the most important of the coal-tar products. It exists in very small quantities in the tar, but can be produced by an artificial process of a highly interesting nature. The first step in this process is the preparation of benzol, either from coal-tar or from its first product—crude naphtha. The addition of nitric acid causes a mutual reaction, by which nitro-benzol is formed. The method of transforming this into aniline was discovered by Zinin. The nitro-benzol is submitted to the action of nascent hydrogen. There are various methods of obtaining the hydrogen required. The plan pursued by Bécamp was to place iron filings, acetic acid, and nitro-benzol in a retort; these ingredients, without external heat, become hot; the vapour being condensed in a receiver is found to consist of aniline, acetate of aniline, and a small portion of unchanged nitro-benzol. The same end can be obtained by treating nitro-benzol with sulphide of ammonium, with acetate of iron, or with arsenite of potash or soda. On pouring a drop of aniline into a vessel containing chloride of lime the mass immediately assumes a splendid purple colour, which is however evanescent. To Mr. W. Perkin is due the idea of isolating this beautiful colour and applying it, in a permanent form, as a dyestuff. Mauve is not the only colour we owe to aniline. The deep crimson known as magenta is produced from the same source, by the action of oxidants. M. Verguin was the first to obtain magenta on a large scale, which he did by treating aniline with tetrachloride of tin. Various other agents have since been employed, and the manufacture of the magenta dye has already become a large and important industry.

These aniline colours have the most wonderful dyeing properties. A small quantity will suffice to colour quite a large bulk. This was illustrated by Professor Hofmann, in a lecture at the Royal Institution, by having two large frames covered with white paper, one having been dusted with mauve and the other with magenta, but in quantities so small as not to have altered

the original colour of the paper. On dashing a beaker full of spirits against these squares, they were immediately suffused with the dazzling aniline colours.

"No dye," says Mr. Field, "that I have examined, whether from the animal, mineral, or vegetable world, can bear comparison for one moment with this crimson colour obtained from aniline. One grain in a million times its weight of water gives a pure red, in ten millions a rose pink, in twenty millions a decided flush, and even in fifty millions, with a white screen behind the vessel in which it is dissolved, an evident glow."*

The aniline bases are colourless, but on being converted into salts, they assume each colour in the rainbow.

The aniline dyes have a strong affinity for silk and wool, which they dye without a mordant. Vegetable materials are hardly affected, unless specially prepared. It is somewhat singular that aniline green, unlike the majority of its congeners, has very little affinity for wool, and the fibre has to be carefully prepared before it will receive the dye in a durable manner.

Benzol was discovered by Faraday, in 1825. To his purely philosophical experiments at the Royal Institution we owe our knowledge of this substance, now so extensively used in industry. He did not dream of its utilitarian application. His aim was simply the increase of knowledge. "The moral of mauve and magenta is transparent enough," says Professor Hofmann. "Whenever, in future, one of your chemical friends, full of enthusiasm, exhibits and explains to you his newly-discovered compound, you will not cool his noble ardour by asking him that most terrible of all questions, 'What is its use? Will your compound bleach or dye? Will it shave? May it be used as a substitute for leather?' Let him quietly go on with his work. The dye, the lather, the leather will make their appearance in due time. Let him, I repeat it, perform his task. Let him indulge in the pursuit of truth,—of truth pure and simple,—of truth, not for the sake of mauve, not for the sake of magenta; let him pursue truth for the sake of truth."†

The artificial production of alizarine, the colouring principle of madder, is justly regarded as one of the great triumphs of modern synthetic chemistry. The importance of madder to the dyer may be estimated by the fact that, in 1870, its yearly consumption was estimated to be 4,750 tons, representing a money-value of 2,150,000*l*. Of this sum, one-half is paid by the dyers of the United Kingdom, for foreign grown madder. There is some doubt as to the colouring matter of the Rubia species, some chemists being of opinion that it contains both alizarine and purpurine. Alizarine was discovered in 1831, by Robiquet and Colin, but it was not until 1848 that Schunck demonstrated its importance by showing that the best madder colours consisted only of alizarine combined with bases and fatty acids.

* "Royal Institution Proceedings" iv 439.
† "Proceedings of Royal Institution," iii, 483.

It is not found in the madder root, in its natural state, but is the product of fermentation.

Its chemical composition ($C_{14}H_8O_4$) being known, the problem was to select some easily obtainable material from which it could be produced. This was done by Graebe and Liebermann. The existence of anthracene ($C_{14}H_{10}$) in coal-tar was shown by J. Dumas in 1831. The green grease used as a common lubricant in this country contains about 20 per cent. of it. When purified, it is converted by oxidation into anthrachinone ($C_{14}H_8O_2$).

The replacement of the two atoms of oxygen by four atoms is a roundabout process, and completes the chemical spell which converts coal-tar into madder colour. The record of this discovery is, to use Dr. Wagner's words, "one of the brightest in the history of chemical technology."

A new shade of blue of great beauty has been obtained by Springmühl from a secondary product derived from the manufacture of artificial alizarine. The colour is consequently extracted indirectly from anthracene, produced from tar. It is stated that, under certain conditions, it is superior to the aniline blues, but at present its cost is quite high.

Coal Dust.

Wherever we turn we shall find that the most trivial things may be turned into gold. The refuse and lumber of one workshop is the raw material of another. And with greater watchfulness, many substances which now remain un-utilized might be made to contribute to the general profit.

At the shaft-mouths of most coalpits there are visible heaps of refuse coal, consisting of the dust produced in reducing the coal as it comes from the pit into proper sizes for the market. The waste at a single colliery in Pennsylvania has been estimated at 80 tons daily, being 70 per cent. of the total amount broken up.

Dr. J. R. Hays, of Washington, D.C., published a paper on a means of using up this dust coal. He mixes the coal dust with clay and coal-tar, and estimates that the cost of these, together with labour, will not exceed 1.00 dollar per ton; and if the waste coal can be delivered in the cities at 2.00 dollars per ton, a fuel of great excellence can be easily prepared at 3.00 dollars per ton, which will be an economical improvement, of great importance to the poor.

Scrap Iron.

The "Scientific American" gives the following good advice.—Manufacturers should look well to their scrap iron; do not waste a piece, no matter how small; gather all together, assort, have different receptacles for steel, wrought, cast and malleable iron. The wrought iron from the carriage shop is the most valuable of scrap iron, but to bring the highest price there must be no malleable or cast iron mixed with it; every pound of scrap has a market value, and it should be packed in barrels or boxes and sent to market. If there be any considerable quantity, it will

pay to send it to the mills and have it worked up into bars. *It is the small manufacturers who do not take care of their scrap,* but allow year after year to pass without paying any attention to it, and scraps of iron can be found all over their factories, while boxes and out of the way corners are filled with it, and hundreds of dollars of what would make the best of bar iron are allowed to go to waste.

Furnace Slags.

Many schemes have been proposed for the utilization of blast furnace slags, but none have been entirely successful. Mr. Wood of the Tees Iron-Works, Middlesborough, has however recently invented a machine for crushing blast furnace slag, until it is reduced to the consistency of sand. Mixed with 8 or 10 per cent. of quick-lime, this sand, when compressed, is said to make excellent concrete bricks, which can be used for building without requiring to be burnt. It is thought that the slag-sand may be used as a manure.

Another plan is that patented by Mr. Woodward of Darlington. The scoriæ is taken as it comes from the blast-furnace and run into a series of moulds on a revolving table. The bricks are then thrown into a furnace and annealed; and afterwards they are used in any ordinary structure for which clay bricks are suitable. They are capable of resisting an intense heat, and can withstand a crushing force of 3 to 4 tons per cubic inch. The slag used in road-making is said to be liable to break up on account of the sulphur contained in it, but it is asserted of the scoriæ bricks, that they remain unaffected by exposure to the atmosphere. The estimated cost is 8*s.* per 1,000, or even less, whereas ordinary bricks cost 20*s.* and upwards per 1,000.

This fact surely furnishes one more proof that there is probably no object in the world which cannot be turned to the service of man.

Vulcanized India-Rubber.

Articles made of vulcanized india-rubber were long thought to be entirely devoid of further use when from wear or accident they were no longer capable of fulfilling their original purpose.

As the vulcanized india-rubber is extensively used in engineering and mechanical pursuits, as well as in the manufacture of a number of miscellaneous articles, waste material is abundant. Mr. H. L. Hall, an American, has taken out patents (1728, 1858, and 1272, 1859) for re-making this second-hand material into vulcanized india-rubber. His plan is to disintegrate the waste materials, and then to convert them into a plastic mass either by boiling, or dry heat, and mixing it with certain proportions of resinous or bituminous matters.

These examples may serve to show what can be done with the most trifling material.

Animal Refuse.

Animal refuse serves many purposes. Take the horse for

instance. The tanner's art utilizes the skin of the dead animal; the hair is made into hair-cloth, and used for the stuffing of mattrasses, and in a variety of other ways; the flesh is used for the food of dogs, and sometimes, at least, of men; the blood is converted into prussiate of potash, and also used for manure; the intestines serve as sausage covers; the fat, after distillation, is used for lamps; the bones are made into knife-handles, or converted into bone-dust; the hoofs are made into buttons, &c.; the shoes are sold as old iron, to be remanufactured; the tendons yield glue and gelatine.*

The Australian preserved meat trade has given rise to a second industry, which has for its object the conversion of the unsavoury refuse of the slaughter-house, the boiling-down factories, and meat preserves, into valuable manures. "About eight different kinds are usually made, consisting of bone-dust, bone-meal, animal guano, superphosphates, half-inch bones, potato manure, phosphoric potash manure, and a special manure for sugar and coffee."

Murexide.

The dye, known as Roman purple, is obtained from guano. So far back as 1776, the famous Scheele discovered uric acid in human urine. In 1817, it was observed that nitric acid transformed urine into alloxan, which Prout, in the next year, found to give a beautiful purple red colour when it came into contact with ammonia. The thought of employing it as a dye first presented itself to Dr. Saac, who observed the red tinge imparted to the hand when in contact with murexide. He succeeded in obtaining a delicate pink dye for woollens, and it has since, by the experiments and improvements of various chemists, been applied also to silk and cotton in red and purple colours. The source of the raw material of murexide is Peruvian guano—the excreta of birds, and the richest source of uric acid known.

Shoddy.

Although both the silk and the woollen manufactures might be claimed as illustrating our subject, we shall not press them into service. There is, however, a secondary industry dependent upon the last-named, which is too curious an example of the utilization of waste, to be omitted. The shoddy manufacture, although it has given rise to a term of reproach, very frequently and often very justly applied, is really a striking illustration of the economy which science introduces into industrial pursuits, that which was formerly considered as entirely devoid of either use or beauty being again converted to purposes of utility.

The staple material of the shoddy trade is the worn-out product of the woollen manufacture. The chief seat of this trade is Batley, in Yorkshire, and to this place come the "rags and tatters" of all the civilized world. Old woollen garments are

* This statement of the economical disposal of old horses is derived from a diagram of Dr. Playfair's.

sent here by the waste merchants from all parts of the country, and are converted into a new textile fabric.

The mode in which this is accomplished is very simple. The waste woollen is cut or torn to shreds by the action of a rag machine, the chief feature of which is a revolving cylinder covered with iron teeth. The number of these teeth varies from 1,000 to 1,500 on each cylinder, according to the coarseness of the material upon which they have to act. These cylinders make about six hundred revolutions per minute, and it will be evident that the work of disintegration must be very effectually performed by the swift action. The remaining processes of the manufacture of shoddy are those, with certain necessary differences, of ordinary woollen manufacture.

When the raw material consists of soft rags, an unpleasant emission of dust is the consequence, which has sometimes a deleterious effect upon the health of those employed. Compared with many other occupations, however, the shoddy trade can hardly be called an unhealthy one. Asthma appears to be the chief ill result.

"Shoddy" proper is formed from the woollen rags of long staple wools, but there is also a variety of it known under the name of "mungo," which is derived from the short staple wools. The method of preparing for manufacture is the same in each case.

The origin of the shoddy trade is involved in considerable obscurity. It appears, however, to be certain that the "Willey," or rag machine, was used in London before it was known at the present seat of the shoddy trade. The year 1813 appears to be the date of its earliest appearance in Yorkshire. Its first use seems to have been to furnish a cheap method of adulterating woollen goods, and from this dishonest origin it has developed into a large and important industry. Some idea of its extent may be obtained from the fact that about 19,000 tons yearly of foreign rag-wool are imported into this country. The quantity of British rags of the same description is not known, but must be very considerably more. About 4,000 individuals appear to be employed in this trade.

Scientific industry, not content with this striking development of one industry from the waste of another, has also busied itself with finding uses for the refuse of this secondary manufacture. The seams of rags are put to rot, and are used for manure on arable land. The hop grounds of Kent are said to be generally treated in this way. Still more curious, a valuable chemical agent which is used in dyeing, prussiate of potash, is also obtained from rags. Even the dirt and dust emitted in the process of preparing the rags is capable of being employed as a manure. Shoddy dust is also collected in separate colours, and used for the decoration of paperhangings. In fact there does not appear to be a single product of shoddy wasted.

A recent development of this trade is the manufacture of what is known as extract of wool. Many articles of dress in the

present day are composed of mixed fabric, in which the warp is cotton, and the weft worsted, mohair, or some other form of woollen. It would be useless to place these in the rag machine. But it has been found possible to separate the woollen by submitting the fabric to the action of chemical substances which destroy the cotton but leave the woollen uninjured.

Having now named several instances in which animal waste and refuse has been utilized, let us consider a case in which success cannot be said to have been obtained, not from a want of means for utilizing it, but from the difficulties which generations of neglect have placed in the way.

Sewage.

Dirt was defined by Lord Palmerston to be matter in the wrong place. The sewage filth, which in our large cities is one of the most dangerous enemies of public health, a constant source of annoyance and fear, would in its proper place be a valuable fertilizer of the soil, and aid in increasing the quantity and quality of the fruits of the earth for the food of man. Amidst the contending claims of the numerous sewage systems there is perhaps some danger of the public growing weary of the subject, and regarding it as a matter for the judgment of experts alone, and without any interest for any one else.

Such a result would be greatly to be deplored, the nation has a very vital interest in the sewage problem, and a just appreciation of this fact must precede any successful attempt towards its solution.

The problem is, firstly, how to dispose of sewage in such a manner as to be harmless in its effects on public health; and, secondly, how to realize the vast potential wealth which is now thrown into the sewers?

Our rivers are polluted to an almost incredible extent. The Thames receives the sewage of 880,000 persons before it comes into the hands of the water companies. "This water contains a larger amount of impurity derived from fœcal matter than filtered sewage."

The influence of this water may be clearly traced in the epidemics of typhoid fever, and there can be no reason to doubt that the double contamination of air and water has a most deleterious effect on public health. But this matter, so offensive and detrimental when misapplied, has a very high potential value.

Mr. John Leigh, the Medical Officer of Health of Manchester, estimates the quantity of liquid excreta passing into the sewers of that city at 50,000 gallons daily, representing the raw material of 2,263 tons per annum of sulphate of ammonia, the market value of which would be 52,049*l*. That is within a fraction of 3*s*. per head of the population. Applying this proportion to the United Kingdom, we have as the value of the liquid excreta passed into the sewers, there to engender foul, fever-breeding gases, the sum of 4,744,200*l*.

But there can be no doubt that the proper destination of all sewage is the soil; it would then become a source of health and wealth instead of a cause of disease and death.

The success of farming depends in no small degree upon the quantity of live stock, the excreta of which forms the food of the soil, and enables it to yield its growths for the food of man. In 1869, 19,821,863 sheep, 3,706,641 cattle, and 1,629,550 pigs, formed the farm stock of 23,370,509 acres.

The manure at present employed in English agriculture is equivalent to that which would be afforded by two sheep per acre per annum.

If the agricultural horses (1,141,996 in number) be added "we may say that the whole farm stock of this country is less than five sheep to every two acres in the hands of English farmers."

It is certainly astonishing, that the most important of all the live stock should have to be left out of consideration. Yet man, who should be the best fed of the animals, takes all from the soil and returns nothing to it. The human excrement. which contains "the most valuable and most highly fertilizing of all manures," instead of being devoted to repairing the waste of the soil and increasing its richness, is suffered to become a prolific source of evil.

The excrement of a sheep is worth at least 5*s.* to a farmer, whilst, under present arrangements, the annual value of the excrement of a man is worth, in South Lancashire, less than 4½*d.* Yet Mr. Mechi considers that the excreta of a thousand human beings would have the same value, considered as manure, as that of the same number of sheep.

Messrs. Hofmann and Witt estimate the manurial value of the sewage of London at 10*s.* 10*d.* per head. Messrs. Lawes and Way say 8*s.* 4*d.* per head.

If we take the lowest estimate, the agricultural value of the sewage of the three kingdoms would be 7,907,104*l.* If, as Hofmann and Witt's analysis would justify, we take 10*s.* per head as the theoretical manurial value, we should then have to estimate the value at 15,814,208*l.* per annum.

This, then, is the interest which the question should have for the general public. If it can be successfully solved, one of the great impediments to public health will be removed, and a vast addition be made to the sum total of the national wealth.

We will now briefly mention the plans proposed for getting rid of this noxious waste, and utilizing its valuable properties. For the removal of the excreta of the human body, and the refuse of the household, there are two essentially different plans, each having violent partizans. Whether the system should be based on earth or water is the primary contention.

Dry Earth System.—Experience has shown, that earth carefully dried until it has become a powder absorbs and renders inodorous human excreta, if applied in sufficient quantities to absorb all the fluid matter. The dry ash of hard coal or anthracite may be used instead of earth,

"But of all disinfectants the earth is the best,
Smells covered by earth are for ever at rest."

This plan is impracticable in large and densely populated cities and towns. Four or five pounds of dry earth would be required daily for each individual. A city of 100,000 people would involve bringing in 250 tons daily from the surrounding country, and distributing it to, perhaps, 15,000 different houses. In the country, and in many establishments situated where there is plenty of land from which to take the earth, and to which the manure might be returned, the system could be advantageously adopted.

Amongst the advantages of such a system, not the least is the prevention of stench from huge midden-heaps, and the protection of wells from fouling. These sources of water-supply easily become contaminated by organic matter. A fall of rain upon one of the huge collections of organic matter visible in our rural districts, is sufficient to produce this resnlt. The source of all springs is this rain-water, which sinks in the ground until it meets some impervious stratum, and is thence carried along by lateral infiltration until it meets with some natural or artificial opening, where man appropriates it to his own uses. These waters are likely enough to encounter organic matter in their underground career without it being at all desirable to increase the facilities for their absorption. In another place, the present writer has called attention to the contamination of wells with water which had previously drained through the graves of a cemetery.*

Here is a description of the waste of sewage, and its results, at Scotherne, in Lincolnshire, as given by Mr. Mantle, a Guardian of the Poor :—

"The village was full of fever cases, and no wonder. The beck was dried up and the wells were filled with sewage matter. They went to one pump and found the pump emitted an unbearable stench. He (Mr. Mantle) asked a woman if she drank the water from the well, and she replied that she did, but that it stank a bit, and there could be no doubt about that, for the well was full of 'pure' sewage matter. They went to another house, occupied by a widow with five children, the head of the family having died of fever last year. This family were now on the books of the Union. The house was built on a declivity; the pigsty, privy, vault, and cesspool, were quite full, and after a shower of rain the contents were washed up to and past the door. The family was in an emaciated state, and one of the children was suffering from fever. After inspecting that part of the village, they proceeded to the house of a man named Harrison, who, with his wife, was laid up with fever; both man and wife were buried in one grave yesterday week, leaving five children to be supported by the Union. When visited, the unfortunate couple were in the last stage of fever, and the villagers

* "Food Journal," Sept. 2, 1872. "Wells and Burying Places," giving, inter alia, a resumé of Lefort's experiments at St. Didier.

had such a dread of the disease that none of them would enter the house, and the clergyman and relieving officer had to administer the medicine themselves. Harrison was the best workman in the parish. The cost to the Union has already been 12*l.*, and at the lowest computation a cost of 600*l.* would fall upon the Union for maintaining the children, and probably they might remain paupers for life. This amount would have been sufficient to drain the parish."*

Water Carriage System.—All towns are obliged to have sewers and drains to carry off the surface water falling as rain and to drain the soil of its too abundant moisture. The houses are connected with the sewers by water-closets, &c., and the sewer gases seek a passage by these channels into the interior of the houses.

Sewer air is not fetid, nor pungent, nor ammoniacal, it has no marked characteristic of its own. If it were foul-smelling, its presence would excite greater attention than it now receives. When it escapes from the sewer into the dwelling it carries with it a virulent poison, and the air is filled with the seeds of disease. A storm of rain, or even a change of temperature, may cause it to rise through any unlucky leak and quickly spread throughout the dwelling. It has been proposed to have a continuation of the soil pipe carried up the roof, and so subject the contents of the drains to the purifying influence of currents of air. The water carriage system being that for the most part in use, we now turn to the proposals for the utilization of sewage.

The Lime Process.—In this the sewage is mixed with cream of milk or cream of lime and violently agitated. When allowed to subside highly putrescible mud is precipitated while the liquor flows off in a tolerably clear condition. Drying the mud is a very offensive operation and much of its valuable constituents escapes. The manure has sold for one third the money it costs.

The *Phosphate Process* is based on the fact that certain mineral phosphates when freshly precipitated, eagerly combine with the organic matter in the sewage. Fetid sewage may be deprived of odour and colour if they are agitated in it. Phosphate of magnesia combines with the ammonia contained in the sewage and precipitates it as double phosphate of ammonia and magnesia; the amount of ammonia is very small and the plan does not appear to be capable of being worked profitably.

Morfit's Process replaces the natural phosphate of alumina by a new artificial material—the "mother water," as produced by Dr. Morfit's process for obtaining pure phosphates of lime by precipitation from hydrochloric solutions of mineral phosphates of lime. The result is, in the opinion of the inventor, a valuable special manure for clay soils.

Blyth's Process is an attempt to obtain the ammonia contained in the sewage, and consists in treating it with super-phosphate

* Quoted from the "Pall Mall Gazette," in Ruskin's "Fors Clavigera," March 1873.

of lime and a salt of magnesia. Very little success appears to have attended this plan.

In *Holden's Process* the sewage is mixed with sulphate of iron, lime, and coal-dust. It yields only 3 per cent. phosphoric acid, ·004 per cent. ammonia, and 0·555 per cent. of organic nitrogen. As a manure, it has, therefore, little value.

The *A B C Process* is a plan of precipitating by sulphate of alumina the valuable constituents of sewage and purifying it with charcoal and clay. Its name is derived from the initial letters of the principal constituents employed, alum, blood, clay, and charcoal. Alumina when in contact with sewage is separated and each particle seizes hold of, and drags down with it, a corresponding particle of nitrogenous impurity. All blood is charged with albumen which coagulates in contact with alum. The treatment with blood precipitates a light hydrate of alumina which would ultimately settle, leaving a clear liquid above it, although a slight agitation causes it to float up again. Clay finely ground with water forms a creamy emulsion which takes days to settle, but in contact with sulphate of alumina coagulates like albumen. It will be seen that there are three precipitations which occur simultaneously, and result in a dense mass which settles at the bottom of the tank. The charcoal is intended to correct whatever impurities may still remain. It is claimed for this system that it deodorises and disinfects sewage, leaves the effluent water fit for drinking purposes, and produces, at a cost of 2*l.* per ton, a "native guano," having considerable manurial value, and selling at 3*l.* 10*s.* per ton. The reports as to this process are very contradictory. One authority tells us that the effluent water contains as much putrescent matter injurious to health as the sewage itself, whilst another tells us that fish have been kept alive in it!

Irrigation.—Perhaps the most important test that the system of sewage irrigation has yet received has been at Merthyr Tydfil, where Mr. Bailey Denton and Dr. Frankland conducted experiments under the authority of the Court of Chancery. Proceedings had been taken against the town authorities, for allowing sewage to enter the river Taff, and the Board of Health had determined to experiment on 393 acres of land, but not having been expeditious enough the gentlemen named were sent armed with full powers. The plan they adopted is thus described :—

"About twenty acres of the land, immediately adjoining the road on which the tanks are placed, have been arranged into filtering areas or beds on a plan devised by Mr. J. Bailey Denton. The land is a loamy soil, eighteen inches thick, overlying a bed of gravel. The whole of these twenty acres has been underdrained to a depth of from five to seven feet. The lateral drains are placed at regular distances from each other, and run towards the main or effluent drain. This is everywhere six feet deep. The surface of the land is formed into beds; these have been made to slope towards the main drain by a fall of 1 in 150. The

surface is ploughed in ridges; on these vegetables are planted or seeds sown; the line of the ridged furrow is in the direction of the under drain. Along the raised margin of each bed in each area delivering carriers are placed, one edge being slightly depressed. The strained sewage passes from the conduits into the delivering carriers, and, as it overflows the depressed edges, runs gently into and along the furrows down to the lowest and most distant part of the plot. The sewage continues to be so delivered for six hours; then an interval of rest of eighteen hours takes place, and again the land is thoroughly charged with the fertilizing stream. The water percolates through the six feet of earth, and reaches the lateral drains, which convey it to the main effluent drain."

The result is that the water is purer than the Thames water drunk in London, and *is used by the workmen on the sewage farm.* The ridges have yielded large crops of kitchen vegetables, sufficient to compensate for the total outlay, whilst portions devoted to Italian grass gave a profit of 24*l.* per acre, and a plot of onions realized 64*l.* per acre. These results appear to be highly satisfactory. What would Dickens have said to the spectacle of the Court of Chancery stepping in to repair the *delay* of a Board of Health?*

Smoke Drainage.—In connection with these sewage schemes, we may notice a suggestion made by Mr. Peter Spence, F.C.S., who advocates carrying the smoke of house fires, &c., through the drains, with the twofold object of purifying the air and sewage. Mr. Spence estimates that in Manchester alone, 20,000 tons of sulphate of ammonia which is now thrown into the atmosphere, would be deposited in the smoke-drains.†

Sea-weed.

But a still wider field awaits development in the vegetable kingdom. Economic botany is still only in its infancy. It has been remarked that the progress of civilization has had the effect of emancipating man from his dependence on the animal kingdom. The savage living chiefly on flesh-meat, clothed with the skins of beasts, dwelling in a hut covered with the same material, and living in a see-saw between gluttony and starvation, is dependent entirely upon the chase. With each remove nearer to civilization there is a tendency to substitute articles derived from the vegetable world for those taken from the animal kingdom. The change is in every way beneficial, and makes man the lord and not the slave of nature.

Every weed that grows has its uses and may hold constituents of the highest value to science.

The economical applications of sea-weed supply an instance of the varied useful applications which science can devise for seemingly waste products of nature. In 1857, Sir Walter Trevelyan,

* See "Pall Mall Gazette," Oct. 24, 1872.

† Mr. Spence's plans are given in a pamphlet entitled "Coal, Smoke, and Sewage, scientifically and practically considered." Manchester. 1857.

who has aided so many good works, placed 70*l.* at the disposal of the Society of Arts, to be awarded as prizes for essays on the application of the marine algæ and their products as food and medicine for man and the domestic animals. The prize was at first awarded to Mr. E. C. C. Stanford, but he afterwards withdrew his communication in order to secure a patent for his important discoveries. In this as in many other cases, the Society of Arts has proved a benefactor to the nation. The success which has attended its efforts in this direction in the past, will, it is to be hoped, only lead it to pay still greater attention to the development of new industries from the still unconquered portions of nature.

Sea-weed is now used as manure. A century ago this was the only use made of it. In the Channel Islands there is a local proverb, "*Point de vraic, point de haugard*," no sea weed, no hay-yard. In Denmark it is used as fuel. Dr. Stenhouse has suggested the manufacture of acetic acid from sea-weeds by a process of fermentation. There are many esculent sea-weeds. The Ceylonese eat the *Plocaria candidia*, the Japanese the *Laminariæ saccharina*, the Chilians the *Durvi Hœa edulis*, the Icelanders the *Halymenia palmata*, whilst nearer home we have the Carragreen or Irish Moss. With some of the people named, the marine-algæ play an important part in their food supplies. The manufacture of Kelp was at one time an important industry in Orkney, but the removal of the duty on salt has led to its abandonment as the raw material of the soda manufacture.

Iodine, that indispensable auxiliary of the photographer, although found in many parts of nature, is produced for practical use from kelp alone. In place of burning the weeds for the sake of the ashes from which to separate iodine and potash, Mr. Stanford substituted destructive distillation, by which the vapourized products lost in burning are condensed and retained for use. Extensive works have been established in Scotland for the manufacture of iodine on this plan.

Jute.

There is a wider field for industrial enterprise and ingenuity in adapting the thousand fibre plants which exist in our Indian Empire to the purposes of civilization. The utilization of jute is an example of what can be done in this direction. Jute is the fibre of an Indian plant (*Corchorus capsularis*), of which it forms the inner bark. The fibre is obtained by maceration, and is sometimes 12 feet long. Before 1830 it was not known in Europe, and was only used in the native manufactures as the material for the gunny-bags in which most Indian products were exported. At first it was only used to make cordage and coarse bagging, but successive improvements in its manufacture have made it available for more profitable uses. It is now the chief staple of Dundee industry, and the quantity imported in 1871 was 1,300 per cent. larger than in 1853! Twenty thousand persons are employed in its manufacture. In place of gunny-bags

it is now made into carpets, and also mixed with cotton and silk for dress stuffs. An effort has been made to turn it to account in paper-making.

The remarkable progress of the jute trade should lead to a careful consideration of other fibres which have not yet been pressed into man's service. There are probably few indeed which might not be made to contribute to increase the comforts and elegancies of daily life.*

Ramie.

An interesting account is given by the "New York Sun" of the ramie plant. Considerable attention is now being given by the planters in some parts of the south to the cultivation of this plant, which grows well in Florida, Georgia, South Carolina, and, in fact, almost anywhere from latitude 33 degrees southward to the Gulf of Mexico. In Louisiana some of the planters are replacing the sugar-cane with ramie, which does not require re-planting, demands comparatively little labour in cultivation, and entails no great expense for machinery to prepare it for market. So far as known, it has no insect enemies, its fibre is less bulky and more easily transported than cotton, and it is sure of a ready sale at remunerative prices. At present the fibre sells in England for 240 dollars per ton of 2,000 lbs., or 8¾c. per lb. Ramie, or Chinese grass, is a plant of the nettle family, which grows spontaneously in British India, China, Java, and other Eastern countries. The fibre, which forms its commercial product, is the inner bark of the stem, and when exposed to view by separation from the husk presents a brilliant pearl-white lustre. This fibre is longer and more uniform than any other, except silk; it is stronger and more elastic than either hemp or flax; takes colour as well as a good quality of silk; and when properly prepared from the raw material, may be spun into fine yarns, suitable for mixing with wool in the manufacture of delaines, worsteds, and other light fabrics. Without admixture it can be woven into fabrics which, it is said, will surpass the finest linens in beauty, strength, and durability. The ramie fibre has also the felting quality superior to either fur or wool. Most of the ramie now sent to market is very imperfectly prepared, the fibre being generally mixed with fragments of the outer bark, which injures its appearance and lessens its marketable value. This is probably the result of inexperience, and the want of suitable appliances for cleaning it. In time improvements will doubtless be made in the present imperfect methods of preparing the fibre when producers will realize much higher prices for their crops.

The Island of Jamaica is said to abound in fibrous plants capable of being adapted both for textile manufactures and for paper-making. Whilst we had the cotton-famine in Lancashire,

* In the "Journal of the Society of Arts," May 7, 1869, there is a paper on Indian fibres, by Mr. Leonard Wray. The reading of this paper gave rise to a very interesting discussion, in which many facts were mentioned to show that there is much potential wealth in them, only waiting the transmuting magic of science.

carrying sorrow and privation into thousands of homes, acre upon acre of fibrous material suitable for the manufactures of Manchester and Glasgow was running to waste in this colony. It is gratifying to learn that the colonial Government are giving their attention to the development of these unused resources.

Taro.

Much remains to be done in adding to the number of vegetable substances used as the food of man. There are plenty of nutritious plants which, with careful cultivation, might become as useful in culinary affairs even as the potato, which has only come into common use within the last two centuries, although it now forms an almost indispensable article of daily diet. Captain Mayne Reid tells us that there are not less than a thousand varieties of edible roots and fruits growing in the Archipelagoes of the Pacific. The best known of these is the taro, which has been called the South Sea Islanders' staff of life. The portion eaten is the tuber of the *arum esculentum*, a dark-looking plant, with little in its appearance to please artistic tastes. It is grown in patches, which are in reality pits of about two feet in depth, the bottom punctured with holes. The roots are planted in these, and the pit is then flooded with water. When the pool has become lowered by evaporation, the harvest is ready. The method of gathering is peculiar, the custom being to gather only as many of the roots as may be wanted for the day's use, the tops being cut off and carefully replaced in the hole. By the time the owner has got to the end of his allotment rows the taros first gathered will have acquired a fresh root. "Like the maguey plantations of the Mexican table-land, a taro patch in the Pacific Islands, once established, yields for ever after, without much given to it of care, cost, or labour."*

The taro is poisonous until boiled, it may then be eaten like the potato, or beaten into flour and made into cakes, but the native method is to make it into batter, and leave it in a gourd-shell for several days until it is bitter and sour.

It is highly spoken of as a nutritious and palatable food. Why should it not be imported, or indeed acclimatized, in this country?

Beet-root Sugar.

In 1747 Marggraf made some experiments upon an ugly looking weed which grew on the shores of the Mediterranean. It contained a good deal of soda and a little sugar. It struck him that the crystals of sugar to be found in the beets could be profitably made into the commercial article. It was not until 1800 that the manufacture was developed. The difficulty of obtaining foreign articles during the Continental war led to its encouragement by Napoleon. By careful attention to the cultivation of the beet it has been greatly improved, and in place of 4 and 6 per cent., it now yields 13 and 14 per cent. of sugar. In 1867–68

* Mayne Reid in "Food Journal," Sept. 2, 1872.

630,000 tons were grown in Europe, in 1869–70 it rose to 689,500. The largest share belongs to France, the annual value of whose beet-root industry was in 1865–6 estimated at 9,200,000*l.* Its influence as a rotation crop is beneficial to the soil, and prevents the necessity of its lying fallow, besides increasing its fertility. There appears to be no good reason why this industry should not be profitably worked in Great Britain. Mr. William Crookes, F.R.S., the well-known editor of the "Chemical News," has done good service by calling attention to this subject on which he has published a practical manual containing the results of the Continental experience.*

Fungi.

A large quantity of valuable food is yearly allowed to go to waste in Great Britain. It might be thought that the pressure of want would quickly lead to the utilization of all available sources of food supply. Notwithstanding the high price of flesh-meat (which ought to have had the effect of turning public attention to the possibility of increased supplies of other forms of food to replace it in a greater or lesser degree) there is still an enormous amount of palatable and nutritious food suffered to lie rotting in the fields and by the wayside. The terror of being poisoned is one of Mrs. Grundy's monomanias, and although the potato, which is own cousin to the deadly nightshade, is daily seen upon her table, yet she avoids many of the wholesome mushrooms from a morbid fear of encountering some poisonous fungus. The consequence is well stated by Dr. Badham, who says:—"In my autumn rambles I have seen whole hundredweights of rich wholesome diet rotting under the trees; woods teeming with food and not one hand to gather it; and this, perhaps, in the midst of potato-blight, poverty, and all manner of privations, and public prayers against famine."

There are about 2,380 species of British fungi, not including those which can only be distinguished by the microscope. Not more than ten are poisonous, whilst Dr. Badham gives a list of 48 which are wholesome, and of common occurrence. That the poisonous mushrooms sometimes get into the market is certain. Dr. Bell remarks:—"To those who know London streets and markets, and the enormous quantity of rubbish and unwholesome material that is bought up by the poor from the costermongers, it is a matter of surprise that there are not more accidents arising from the use of mistaken mushrooms. In the autumn of 1868 several deaths took place from this cause, and it was ascertained that whole cartloads of putrid mushrooms and suspicious-looking fungi had been dispersed through the streets of the poorer quarters. Even the genuine mushroom, when eaten in a state of decomposition, becomes a rank poison; and it only shows how much we are in want of some system of proper inspection of food sold in our streets. They have such a system in most Continental

* "On the Manufacture of Beet-root Sugar in England and Ireland." By William Crookes, F.R.S. Lond., 1870.

countries, and especially in Italy, where immense quantities of fungi are eaten."

In the Roman States the fungus trade is said to have a yearly revenue of 4,000*l.*

Pine Leaves.

The pointed leaves of coniferous trees have of late years been manufactured into what is known as forest wool, which can be curled, felted, or woven. In combination with cotton it has been used in the manufacture of blankets, and also of various articles of wearing apparel. In the preparation of this pine wool, an ethereal oil is evolved, which has value as a medical agent, serves also as lamp-oil, and is a solvent of caoutchouc. The refuse of the leaves is compressed into blocks and used for firewood, and the resinous matter produces gas enough for the illumination of the Silesian factory in which M. Pannewitz, the inventor of the process, makes wool from pine leaves.

Paper.

The paper trade has for many centuries been dependent upon waste substances for its raw material. The Egyptians manufactured theirs from the papyrus plant, a reed at the time growing plentifully on the Nile. When the idea of making paper from artificially prepared pulp first presented itself to the inventive mind is unknown. Very early in the present era the Chinese are believed to have prepared writing material from the bark of various trees, from the soft parts of bamboo stems, and from cotton rags. The Arabians transplanted this art to Samarcand about 706 A.D., and their descendants in Spain are thought to have used also hemp and flax.

Similar obscurity covers the origin of paper made from linen rags, which appears to have been well known to the Arabs as early as 1200 A.D., since Abd'allatif, who visited Egypt in that year, notes that the mummy cloths were taken from the catacombs to be made into garments, and to be sold as material to make paper for the scribes and the shopkeepers.

At the present day paper is made from a wide variety of substances. Amongst these we may name aloe fibre, asbestos, banana fibre, bean stalks, sugar-cane, clover, cotton, flax, jute, sea-weed, wood, straw, and esparto grass.

The paper manufacture has been a favourite subject for the exercise of inventive ingenuity, and the fact that the texture, the chief quality required, exists almost throughout the vegetable kingdom, has led to experiments on very diverse substances.

These experiments have acquired additional importance from the gradual failure of the ordinary raw material, rags, to supply the increased wants of the paper trade. The enormous development of literature within the present century, has necessitated such a greatly increased supply of paper, and such a rapid extension of the manufacture, that at some periods there has been

practically a rag famine, and it became of the highest importance to find some other material which could be utilized.

So long ago as 1770, a little book was written by J. C. Schaeffer, which contained samples of paper made from eighteen vegetable substances. This is perhaps the first attempt at utilizing the fibrous material of plants in modern times, and is so far creditable to its author. But, like most first attempts, its value consists rather in the conception than in the execution, for the samples he has given are exceedingly coarse and rude, unpleasant alike to sight and touch.

At the beginning of the present century, Matthias Koops, a German inventor, settled in England with the intention of making paper from straw, and in this he succeeded. One of the most curious works connected with the history of the paper trade, is a volume compiled by him, the body of it printed on straw paper, with an appendix printed on paper made from wood. His process consisted in cutting the straw into strips of about two inches long, boiling it in water, and then soaking it in lime-water for eight days, and repeating the operation until it was softened into pulp. The result is a thick yellowish paper not altogether disagreeable, but undeniably thick and coarse, much more so in fact than many of the common wrapping papers now in daily use.

Koops's paper is of a pale yellow colour, which may strike some as being disagreeable simply for its novelty, but which appears to be really more pleasant and less fatiguing to the eyesight than the brilliant, yet pale and monotonous white, to which we are all so painfully accustomed. Indeed, it is by no means certain that white would be the colour selected for printing purposes, if the choice were made on strictly scientific principles. The late Charles Babbage, when printing his extensive series of logarithmic tables, made numerous experiments in order to discover the shade of colour most suited for reading, as causing least straining to the eye.

Almost all those consulted agreed in giving the preference to the coloured papers, but the particular tint was not so unanimously fixed upon. Yellow appeared to have the preference, and was chosen for the first impression, the shade being rather lighter than that of Koops's straw paper.

It would not be rash to assert that the destruction of natural colours by manufacturing processes, which the production of paper as now made so largely involves, is in itself a fresh illustration of wasted power, and one by which we are, both directly and indirectly, greatly the losers. The time, labour, plant, and adjuncts consumed to attain this result would seem to amount not only to considerable and positive waste, but to yield as their result the uniformly colourless product, which is alike unsightly, unscientific, and unfortunate in its end, whether economically or artistically considered. The fact is that most vegetable substances used as paper material possess, in nature, colour which is pleasing and grateful to the eye, and we may

therefore be pardoned the expression of the doubt as to the wisdom of destroying it by the costly process of bleaching.

The mode of treatment of the raw material adopted by Koops was not, commercially speaking, a success; but he certainly paved the way for succeeding inventors, and straw is now very largely used as a paper stuff.

Within the last few years a new paper material of incalculable value has come to light. This is Esparto grass. This plant has been known to botanists for more than 1,800 years, and during all this time has been looked upon as little more than a useless weed. In 1856 only 50 tons of it were imported into this country. In 1871, or but fifteen years later, the imports had risen to 130,000 tons owing to the successful method of converting it into pulp, devised by Mr. Robert Routledge. It is said to grow in the Sahara to an "inexhaustible extent." The Romans made whip-lashes of it for their unhappy slaves; the wiser moderns print their newspapers upon it.

The success which has attended these efforts to convert vegetable fibre into paper material should stimulate further exertions in this direction. There can be no doubt that in our own country, as well as in those favoured with a more luxuriant flora, there are hundreds of plants which scientific experiment would show to posses all the requisite qualities.

The subject is so wide that we can only give specimen bricks. We have seen examples, some large, some trifling, of the utilization of waste from each of the three kingdoms of nature. The examples we have given point a twofold moral—the boundless wealth of nature, the incalculable riches which are in even the unconsidered trifles of the Creation, and the aid which science can give us in their transformation.

The British nation owes a deep debt of gratitude to the man of science. Gratitude has been defined to be "a lively sense of favours to come." Even taking this not very lofty estimate, the world is ungrateful to her benefactors. This is shown in various ways. For instance, the British Association, having spent 600*l.* upon an investigation, memorialized the present Government for a grant of 150*l.*, which was very politely but very decidedly refused. The object of the British Association was to increase the sum of our knowledge respecting the tides. When we recollect that our ignorance on this subject "often leads to shipwrecks, and that their refusal of 150*l.* might lead to the loss of some valuable ship," we shall be able to appreciate the wisdom of our governors, who can find thousands and millions for war and bloodshed, but hesitate over a single shilling for researches which might possibly result in the greatest benefit to the community at large.

There is nothing in the history of the past to justify this suspicion, this timidity, this penny-wise and pound-foolish policy. There is no domain of Nature which, on being explored, has not yielded golden fruit. Let us look at the matter in the narrowest possible light, and we shall see that to the deep-

thinking and patient research of the scientist we are indebted for all the comforts and privileges which civilization bestows. Our entire industrial fabric is built upon that knowledge of Nature acquired by long and painful observation of those who in their day were looked upon as makers of foolish and unnecessary experiments—mere theorizers, without any common sense or practical ability. This Philistine spirit is by no means extinct, and yet the past history of all our industries is surely enough to shame it into everlasting silence.

When Newton was investigating the phenomena of optics he sometimes experimented with that very familiar scientific instrument, the soap-bubble, and the neighbours who got sight of the poor gentleman very sagely thought him mad. That is a fair type of the estimation in which the world at large has ever held the man of science.

If we are wise we shall encourage what Newtons we may have, and from their soap-bubbles—from the grime and dust of their laboratories—from the tap of their hammer on the rocks—from the weeds they have gathered on native and foreign shores—we shall reap an abundant harvest of pleasure and profit.

The student first discovers the principles which regulate the order and action of the forces of nature, then the inventor adapts and applies those discoveries to the purposes of every-day life, thus creating new industries and increasing the material wealth and prosperity of the nation. These benefits are not confined to any one class, but permeate—slowly, it is true—down to the lowest social stratum.

A modern writer has said that science is the available providence of man, and though the thought may startle by its novel form, it is only another way of putting the same truth which Shakespeare taught, when he said, "Ignorance is the curse of God; knowledge the wing with which we fly to heaven."

WILLIAM E. A. AXON.

NOTE.—Whilst it would be impossible to name all the varied authorities who have written on the various branches of this subject, it would be unjust not to direct special attention to the writings of Mr. P. L. Simmonds, who has directed much attention to it, and has lived to see many of his suggestions carried into effect, to the increase of the general wealth. The Society of Arts, by the premiums it has offered, and by the many excellent papers it has published, has done great service. The following works may be consulted with advantage:—"Science and Commerce: their Influence on our Manufactures." By P. L. Simmonds. Lond., 1873. "Waste Products and Undeveloped Resources." By P. L. Simmonds. Lond., 1862 (new edition in the press). "The Utilization of Minute Life." By Dr. T. L. Phipson. Lond., 1864. "The Useful Plants of India." By Col. Heber Drury. 2nd edit. Lond., 1873. "A Handbook of Sewage Utilization." By Ulrick Ralph Burke. Lond., 1872. "A Digest of Facts relating to the Treatment and Utilization of Sewage." By W. H. Corfield. 2nd edit. Lond., 1871.

SHIPWRECKS AND LIFE-SAVING APPARATUS.

THE natural position of Great Britain, surrounded on all sides by the sea, has converted her people, with their dominant and adventurous character, and active spirit of enterprise, into the first maritime nation of the world. The subject of this paper is, therefore, one of peculiar interest to every Englishman, and the vast magnitude of the commercial interests involved in our rapidly extending shipping trade,—increasing the sum of human life and property affected by the dangers of navigation,—makes the adoption of definite means for lessening and preventing marine disasters an imperative necessity. Indeed, the increase of traffic, value of merchandize carried, number of sailors employed, and passengers conveyed by sea, are so great, that it is a national duty to arrive at some methods by which the loss of life and ships from various preventible causes may be diminished.

The following table, showing the tonnage of British and foreign vessels entered and cleared, with cargoes, at ports in the United Kingdom, from 1862 to 1871, suggests an imposing picture of prosperous activity.

Years.	Entered.			Cleared.		
	British.	Foreign.	Total.	British.	Foreign.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1862 ..	6,591,654	4,149,154	10,740,808	7,400,454	4,309,395	11,709,849
1863 ..	7,302,039	3,835,319	11,137,358	7,961,008	3,926,797	11,887,805
1864 ..	7,813,179	3 488,931	11,302,110	8,596,234	3,576,540	12,172,774
1865 ..	8,356,914	3,801,780	12,158,694	9,056,729	3,770,422	12,827,151
1866 ..	9,215,820	4,061,370	13,277,190	9,954,147	4,055,947	14,010,094
1867 ..	9,356,814	3,984,634	13,341,448	10,586,058	4,261,523	14,847,581
1868 ..	9,572,450	4,279,207	13,851,657	10,902,171	4,570,848	15,473,019
1869 ..	10,042,182	4.444,518	14,486,700	11,313,757	4,603,227	15,916,984
1870 ..	10,308,952	4,601,790	14,910,742	11,934,087	4,779,851	16,713,938
1871 ..	11,250,120	5,205,222	16,455,342	13,396,583	5,560,872	19,047,455

In the year 1870, the number of vessels cleared outwards, amounted to 60,156, and it is estimated that about half a million of men are employed in the merchant service.

In a traffic of such enormous extent, a proportion of accidents is unavoidable, but it has been for years notorious amongst our seafaring population, and is now well known to the general public, that the majority of disasters at sea arise from preventible causes, and are attributable to the dishonest and—in cases where loss of life is involved—criminal practices of a small clique of inhuman shipowners. The "Appeal" of Mr. Plimsoll has brought this part of the subject clearly before the people, but we may state that for many years prior to Mr. Plimsoll's movement in the matter, the Board of Trade had all the facts in its possession, and the *Life-boat*, the ably conducted organ of the National Life-boat

Institution, persistently and quite as forcibly as Mr. Plimsoll, called attention to these abuses, and pointed out sure means by which they might be eradicated.

Our wide possessions and proud position are owing chiefly to the energy and courage of the men who have commanded our merchant ships, and the prosperity and future progress of our country are inseparably connected with the maintenance of our merchant service in an efficient and flourishing condition, and with the preservation of our race of seamen (which is the best in the world if properly cared for), from the demoralising influence of reckless employers. With such considerations before them, it would be presumed that a just and thoughtful Government, having all the details in its possession, would long ago have adopted stringent measures for the attainment of this object. We find, however, that such is not the case, and that perfectly patent evils are allowed to continue without any vigorous effort on the part of the State to remove them. There is, it is true, an Act in force, designed partly to meet the case, but although it contains many provisions of obvious utility, it is so loosely and vaguely constructed as regards the clauses relating to equipment and safety of vessels, that a small number of nefarious shipowners are enabled with impunity to disregard its intentions, and ships that are rotten, wretchedly equipped, undermanned, and overloaded, leave our ports at their bidding in the face of day, carrying their crews, in but too many cases, to probable destruction.

The grossly unsatisfactory state of these vessels and their management will be more easily realized from the fact that in the ten years, 1862 to 1871, no less than 7,208 were wrecked in conditions of weather varying from a calm to a strong breeze, and 5,898 in moderate to strong gales; under circumstances, that is, in which there would not be the slightest danger to any vessel, properly constructed, handled, and equipped, manned with a full complement of hands, and not overloaded. From the returns which have been published by the Board of Trade, it appears that the largest proportion of wrecks occurs amongst the coasting vessels engaged in the carrying trade; principally ships of the collier class, and those which carry metallic and stone ores. On consulting these returns we find that of this class of vessels 7,231 were wrecked in the seven years 1865–71, all, it is believed, from preventible causes. The total number of wrecks around the coasts of the United Kingdom from 1850 to 1871 amounted to 32,185, and the loss of life, as far as can be ascertained, attending those disasters, reached the sum of 17,855.

It is observable, also, that the growth of traffic is attended by an increase in the number of casualties, and the following table giving the annual average for every five years from 1851 to 1871 shows this most clearly:—

1851	..	1,269	
1852	..	1,115	
1853	..	832	Annual average for five years, 1,068.
1854	..	987	
1855	..	1,141	

1856	..	1,153	
1857	..	1,143	
1858	..	1,170	Annual average for five years, 1,252.
1859	..	1,416	
1860	..	1,379	
1861	..	1,494	
1862	..	1,418	
1863	..	1,664	Ditto.. .. .. .. 1,538.
1864	..	1,390	
1865	..	1,656	
1866	..	1,860	
1867	..	2,090	
1868	..	1,747	Ditto.. .. .. .. 1,862.
1869	..	2,114	
1870	..	1,502	

The foregoing statistics enable us to comprehend the magnitude of the evil to be coped with, and which, in so far as it is capable of being diminished, is a disgrace to the British nation.

We will now consider the causes of shipwreck, and the means by which they may be diminished. The first, Marine Insurance, is a moral cause. The part played by the rapid growth of the system of Marine Insurance in increasing the number of shipwrecks, and, consequently, in adding largely to the loss of life at sea, can scarcely be over-estimated. This system, by removing from shipowners the risk of loss on payment of a premium but comparatively trifling, has led to a callous indifference amongst a certain class as to the safety of a vessel and the human lives embarked, and by rousing a spirit of cupidity has induced them to resort to practices which can only be rightly characterised by the use of somewhat strong language. We have condensed the following particulars of the loss of the "Utopia," from the *Lifeboat*, for July 1st, 1867, as a striking example of the effect of marine insurance on the class in question. The "Utopia," 949 tons burthen, sailed from Liverpool for Bombay on the 10th March, 1867, and was 'abandoned by her crew almost at the moment of her foundering.' When loading for the voyage in the Brunswick Dock, she took the ground, and sustained serious damage from the straining caused by the accident. Previously she had made but little water. Immediately after the accident, however, '28 inches were found in her, and on two subsequent occasions as much as 40 inches.' The owner directed the men employed in storing the cargo to pump her out, and this was usually done after each day's work. She was visited, whilst being loaded, by the agent of Lloyd's Salvage Association, of Liverpool, and by one of the surveyors of the Mersey Docks and Harbour Board. The latter gentleman was prompted by the state of affairs to advise the owner as to the extent to which she might be loaded with safety, and '*marked the side of the midship section to show the same*, leaving a clear side of 6 feet 6 inches.' Considering the length of the journey the vessel was to undertake, and the vicissitudes of a long voyage, this margin was narrow enough. The owners, however, ignored the surveyor's recommendation, and continued loading until she was immersed 6 inches deeper than the safety line, and they afterwards 'had

120 tons of coke put on board.' The master, Captain Lean, now resigned his appointment, having previously remonstrated ineffectually with the owners on the state of the vessel. She was afterwards visited twice by the surveyor to the Liverpool Underwriters Association, who on the last occasion, the 9th March, discovered that she had not more than 4 feet of clear side, and he stated that 'he should not like to cross to Dublin in her in a strong S.W. gale.' No action in the matter was taken by the Association, because the vessel had not been insured with them; the insurance having been effected in London where the state of the vessel would not be known. Captain J. Dickie, appointed master in the place of Captain Lean, did not like the aspect of affairs any more than his predecessor, and raised objections. We now come to the most remarkable phase of this scandalous business.

The following almost incredible letter was written to Captain Dickie by a shipbroker at Liverpool, and signed by the agent, who had recommended Captain Dickie to the owners of the vessel:

'DEAR SIR, 'LIVERPOOL, *March* 8.

'I AM very much surprised to hear that you are making difficulties about going in the Utopia; and I must inform you that, if after I have recommended you to the owner, you do not go in the vessel, I will take care you never get any employment in a ship out of Liverpool, if I have any power to prevent you, *as I will not put up with this sort of work.* (!)

'Yours truly,

'*Captain Dickie.*' . . . . . .

In other words, 'choose between a bare chance of life in that vessel, or certain professional ruin.' "On Sunday morning, the 10th March, the shipmasters met the owner and his agents, Messrs. . . . . and . . . . . , and the pilot on the landing stage, with the crew who had been shipped to the number of seventeen, including six able seamen only—a crew evidently insufficient in number for a full rigged ship of her size, according to the evidence of several competent witnesses. The riggers had been at work at the pumps in the evening, but had desisted before the crew went on board, not because there was no more water to pump out, but lest, apparently, the latter should get alarmed, and decline to proceed to sea in the ship." Thus the "Utopia," to the knowledge of captains, surveyors, pilots, agents, and owners, "overladen, undermanned, leaky, and ill-formed in her equipment, was towed to sea from one of our greatest ports, to pursue her hopeless voyage."

The vessel had scarcely left the river before 3 feet 3 inches of water was found in the hold. The pumps were then manned and continuously worked until the 11th, when they became choked with sand, the soundings then being 4 feet 10 inches in the hold. On the 13th, the ship having meanwhile been

gradually settling, the master determined to make for Cork, but she had become unmanageable, and at 4 P.M. on the 13th, "there being only 4 or 5 inches from the covering board to the water's-edge," the master and crew took to the boat and left her. They had scarcely got clear when she went down head foremost. Fortunately, the crew were picked up and saved from the fate they might have suffered had the vessel gone down in mid-ocean, but it was only by the barest chance that these men escaped with their lives. The state of this vessel may be said to have been officially known, and yet there was no power to prevent her going forth from a public landing stage. We have selected this as an average typical case. There are many far worse, which have been attended with far more disastrous consequences. The names of the owners of the "Utopia" and of their agent would have been given if we had been in a position to obtain them from the records of the Board of Trade. If men guilty of such a system of conduct are to enjoy an immunity from punishment and public disgrace half the effect of any investigation of the system itself will be lost. Exposure is one of the most powerful agents that could be devised to prevent a so-called respectable class of traders from drifting into such malpractices, and if they are to be shielded from this others disposed to tread in their footsteps will have so much the less cause to dread the consequences.

There is not, probably, any commercial institution that is not susceptible of abuse, and that does not present opportunities for fraudulent dealing; but it is scarcely necessary to observe that the feasibility of fraud offers no excuse for its perpetration. A thief is not shielded from publicity, nor his crime allowed to go unpunished, because the articles stolen were not effectually secured, and we cannot understand the plea advanced for the suppression of names in cases of fraudulent wrecking and loss of life therefrom on the ground that the system of marine insurance offers inducements to a shipowner to be dishonest. Mr. Plimsoll has very clearly explained why underwriters are reluctant to refuse claims which they believe to be fraudulent. The loss to each individual underwriter is so small that it is not worth his while to risk an investigation in a suspicious case. We may, however, suggest the advisability of establishing a committee of protection, composed of members of all the Underwriters' Associations in the kingdom, to whom all suspicious cases should be submitted, and who should be empowered to take action for the resistance of fraudulent claims.

Space will not permit an examination of all the material causes of preventible shipwrecks, and our attention must, therefore, be chiefly confined to the most prominent, which are: overloading, unseaworthiness, bad and insufficient equipment, defective compasses, and incompetent masters.

Overloading arises from a desire either to enlarge the profits of a voyage or to swindle the underwriters. As Mr. Plimsoll has explained, taking the case of "a ship which will carry 900

tons of cargo with safety, if the freight of 700 tons is absorbed by expenses—wages of seamen, cost of fuel, wear and tear, interest of capital, cost of insurance, &c.—leaving the freight on the remaining 200 tons as profit to the owner, it is clear that by loading an additional 200 tons the profits are doubled, while the load is only increased by about a quarter more." Hence, it is not a matter for astonishment that it is a source of great temptation to a grasping shipowner to load the additional 200 tons, trusting that the lives on board may be saved, and knowing that if the ship arrives at her destination in safety he will realize double profits, while should she be lost, the underwriters with whom she is insured will recoup him her value—and perhaps more. It is needless to add that the class of shipowners previously referred to succumbs to the temptation.

Unseaworthiness.—This may result from a variety of causes; amongst the rest, age, bad or defective construction, and want of repairs. It is well known that vessels are sent to sea so rotten with age that they go to pieces on touching the ground, and it is not an uncommon thing for a vessel twenty-five years of age to have reached this stage of rottenness.

On consulting the wreck returns for 1869 only we find that there were lost:—

436	vessels	21	and not exceeding		30	years	old.
229	,,	31	,,	,,	40	,,	
112	,,	41	,,	,,	50	,,	
53	,,	51	,,	,,	60	,,	
32	,,	61	,,	,,	90	,,	
2	,,	91	,,	,,	100!	,,	
864							

the greater proportion of them, it may be safely assumed, good for little else but firewood. Economy as regards cost of a vessel is, of course, the incentive to the use of bad and inadequate materials for her construction, and a desire to sacrifice everything to speed and space for stowage has produced a class of vessels of weak and unsafe proportions. Some owners never pay the slightest attention to the repair of their vessels because they begrudge the expense and the time during which a ship under repair must remain idle. It is a better speculation to run as many voyages as possible, regardless of the lives of crews, and to look to the underwriters for the value of the vessels in the event of shipwreck.

Equipment.—Many vessels, especially of the collier class, are most wretchedly equipped as regards everything essential to the safety of crew and vessel. They are ill-found in cables and anchors, rigging and compasses, and are unprovided with life-belts or a trustworthy boat for the escape of the crew should they be wrecked. Hence, any emergency, even of the most trifling character, finds them totally unprepared, and they are wrecked when a sound rope or properly constructed anchor and cable would have saved them; and, if help is not at hand, the

crews are drowned because the boats are useless, and there are no life-belts to support them until succour arrives.

Defective compasses form a prolific source of shipwreck. The existence of iron in the construction, fittings, or cargo of a ship, is one of the most frequent causes of the defective working of compasses, which may be true themselves but do not work correctly because they are brought within the range of disturbing influences for which no allowance has been made in the process of adjusting. Iron forms so great a portion of a ship's equipment, construction, and ornamentation—as in stoves, funnels, lamps, fittings, rails, bolts, &c.—that often it is not all allowed for, and in some cases is entirely ignored, in the adjustment of compasses. It is a common error to suppose that, under all circumstances, the needle is true to the North; it is not so, and the presence of iron in the vicinity of the compass will produce an effect that, if not allowed for, will throw the reckoning entirely out and most probably lead to shipwreck. Again, the compasses themselves —apart from all local disturbance, which will derange the best instrument—are in many cases of the most imperfect description, constructed by men ignorant of the principles of magnetism and magnetical science. The mechanical construction of compasses has been much improved, chiefly through the efforts of the Admiralty, by whom a Committee of Inquiry was organised about forty years ago, since which date many improvements have been gradually introduced, not only by official makers but by compass-makers generally. Still, however, although there is no difficulty in obtaining a good compass, culpable carelessness is shown by many shipowners not only in disregarding the effect of local disturbance on the indications of a compass, but also in supplying compasses to their vessels that are as worthless as toys. The best and most simple compass invented is that of Mr. F. Dent, the eminent chronometer maker, of the Strand, London. It is known as Dent's Fluid Compass, and the principal feature of its construction is the immersion of the card and needle in fluid encased in a bowl hermetically sealed, by which means the needle is relieved, in a great measure, from any local disturbance.

As an example of the dangerous errors in reckoning that may arise from a defective compass, the case may be cited of H.M.S. "Apollo," which, in 1803, when leading a convoy of sixty-nine merchant vessels, bound for the West Indies, drove on shore and was wrecked; as were also forty of the convoy following immediately in her wake. Owing to the presence of an iron tank on board, her compasses were defective, and, according to their showing, she was presumed to be forty miles distant from the Portuguese coast, on which she struck.

Incompetent Masters.—The increase in our shipping trade, and the removal by the present system of marine insurance of any risk of loss from wreck, have led to the employment of a large number of incompetent masters, and we find that many vessels are placed in the charge of men utterly unqualified for their position. The effect produced by such a discreditable prac-

tice may be estimated from a glance at the wreck returns for 1869 alone. It is there shown that of the 2,594 vessels wrecked in that year, 571 only were under the command of masters who held certificates of competency, 264 under masters holding certificates of service, 389 in charge of foreign masters not holding British certificates, whilst 1,135 were lost under the command of men not legally compelled to possess certificates of competency. In 235 cases it was not known whether or not the masters held certificates. Considering the importance of this point, we think that steps should be taken for ascertaining the qualifications of a master. Before being permitted to take charge of a vessel, a man should be compelled to pass an examination, and to prove himself fit for the position, and a law should be passed visiting with severe penalties not only the master who cannot produce a certificate of competency, but also the shipowner who employs him.

In addition to the foregoing causes of preventible shipwreck there are many others which we have not space to notice :— under-manning ; bad stowage ; deck loading ; deficient engine power ; improper lengthening, &c.

It should be remembered that an enormous percentage of the entire number of wrecks and loss of life results from the above causes, and that such calamities do not spring from the natural dangers of the deep. They are offerings at the altar of cupidity and recklessness, and it is in the power of the State to stop the awful sacrifice.

England has been called the "Queen of the Seas." But what has she done for those who have won for her that proud title? For every other class of the community she has legislated with care and forethought ; but the sailor is left almost entirely, in those things which concern his personal comfort and safety, to the mercy of his employers, upon whom only a slight check is imposed. And it is highly creditable to the great body of shipowners, that so few, comparatively, of their number have been found unworthy of their unchecked responsibility, and that the most powerful do not abuse their power. The lives, however, and health of so large a body of men as our sailors should not be left to chance.

We will now consider the various means which have been suggested for the saving of life and prevention of shipwreck, classing them broadly under three heads.

I. The adoption of all practicable precautionary measures which may lead to the prevention of shipwreck. This object may be attained as closely as possible, as regards the natural dangers incident to sea traffic, by the improvement of our harbours, by increasing the number of harbours of refuge, and by the erection of lighthouses at all points where they are likely to be of service. The dangers of man's own making may be diminished, if not entirely removed, by improvements in the "Merchant Shipping Act," which should contain clear and full provisions respecting stowage of cargo, loading, manning, equip-

ment, construction, &c., of vessels ; and the reforms in question, to be effective, should be accompanied by some plan for insuring an active supervision of those concerned.

With reference to the above we find in the *Life-boat* the following sound practical suggestions :—"That at every port in the United Kingdom, large or small, an officer in connection with the Customs, or Coast-guard, or Local Marine Board, or Shipping Office, should, periodically in the case of vessels in the home trade (say, half-yearly), and before sailing on each voyage in the case of ships in the foreign trade, inspect personally, or by deputy, every vessel and her equipment, receiving replies to printed queries signed by the master in each case, and giving him in return a permit to sail. The cost of such supervision might be paid from the Mercantile Marine Fund, if there is a sufficient annual amount available for the purpose. At the same time it should be punishable as a misdemeanor for the master of any vessel to sail without having received such a certificate ; and as felony for him to give false information in reply to the established queries as to the state of his vessel and her equipment, &c. In the second place, to prevent the overloading of any vessel, which is so frequent a cause of unseaworthiness, it should be required that every vessel should have visibly painted on either side a thin white line, showing the level to which she might be safely loaded, and below which it should be illegal to immerse her. Such a line would not be a disfigurement to any ship, whilst, being visible to every one, the authorised surveyors could in a moment tell when any vessel was overladen, without having recourse to actual measurement."

We have already shown that a large number of vessels are lost in the charge of uncertificated masters. Now, we are of opinion that a man who undertakes the charge of a vessel should be able to prove his fitness for the trust, and that this is a point on which it should not be left to shipowners to decide. It would be quite possible to organize and appoint a body of examiners to ascertain the qualifications of men desirous of becoming masters, and it should be necessary for a master to produce a certificate granted by the examiners before being legally entitled to act, while severe penalties should be imposed on shipowners who employ men not holding a certificate of competency. The foregoing measures, carefully developed and strictly enforced, would considerably diminish the casualties from shipwreck ; indeed, it has been calculated that they would reduce them by more than one-half.

II. The employment of every possible means on board merchant vessels for saving the lives of their crews and effecting communication with the shore in the event of their getting stranded. These points could be gained :—1. By requiring that every vessel shall be furnished with an *efficient* life-boat—on some defined and selected plan—of sufficient capacity to contain the whole crew. 2. By providing some simple floating apparatus —such as that designed by Mr. W. E. Matthews, of the Isle of

Wight, or by Dr. Sibbald, of Liverpool—for conveying a line to shore, and thus effecting communication with it. 3. By the provision of an *efficient* life-belt for each of the crew. 4. By the adoption of a simple plan for lowering and detaching boats, by which the fatal accidents now so frequent in lowering boats may be prevented.

The usefulness of a life-boat to a vessel when wrecked beyond the reach of external aid, or when the danger is so imminent that a boat from the shore would not be able to reach the vessel in time to save the crew, is so obvious that it need not be dilated upon. As regards floating apparatus, it has been suggested that a light buoy or cask with a long small Manilla line—say 200 fathoms—attached to it, might often, in the event of a vessel stranding, be the means of effecting communication with those on shore. Each shipowner should be compelled to provide a life-belt for every soul on board his vessels, as there are many cases in which crews and passengers have lost their lives because they have not had means for sustaining themselves in the water until approaching help could reach them. When we call to mind the numerous instances in which entire boat-loads of persons have been lost owing to defective boat-lowering and detaching apparatus—especially in cases of emergency arising from shipwreck—the imperative demand for some general and simple means of safely effecting the lowering and detachment of a boat is at once apparent. Passenger ships especially should be provided with a reliable apparatus, as thousands of lives have been lost in the destruction of such vessels owing to accidents in lowering the boats.

In considering the multitude of inventions designed to meet the above described requirements, the necessity for some means of practically testing the value of each at once suggests itself. The most effectual method would appear to be the formation of a committee composed of men thoroughly conversant with the subject, to examine and test in some suitable place—such as Woolwich Dockyard—the practicability of these inventions. The plans—in life-boats, life-belts, life-rafts, boat-lowering apparatus, &c.—best fulfilling the purpose for which they are intended would then be known, and the State could definitely particularize, and with certainty enforce, the adoption of one or other of the means decided upon by the committee as essential for the safety of passengers and sailors. It would then be possible to frame an act so clear and conclusive in its provisions, and with powers so complete, that no shipowner could neglect to equip his ship with efficient life-saving apparatus without rendering himself subject to severe penalties; and so that, in cases of loss of life occurring through a manifest evasion of the law, there would be no difficulty in visiting with due punishment the really responsible parties.

There would be no lack of material for a committee, such as that proposed, to work upon. Many designs for a ship's life-boat, of various degrees of merit, have been put forward.

Amongst others we may notice:—*White's Life-boat.*—It has been adopted for their ships by most of the large steam-packet companies, also by the Lords of the Admiralty for the men-of-war stationed on the West Coast of Africa, and has proved to be admirably adapted for the work of a ship's life-boat.

Berthon's Patent Collapsing Life-boat.—Many lives are lost owing to vessels being inadequately furnished with boats. Boats occupy a large amount of space, and inability to find room for the stowage of the full number required, in serviceable positions, appears to be the chief reason why ships are usually deficient in boat accommodation, although, in many cases, it is, doubtless, a mere question of expense. To enable a vessel carrying a large number of passengers to be fully equipped in this respect, without encroaching on space required for other purposes, the Rev. E. L. Berthon, of Romsey, Hants, has invented a *collapsing life-boat.* It is so constructed that it can be folded against a ship's side, and in that state occupies one-sixth of the space of its own width. A description of the construction of this remarkable boat would scarcely be intelligible to ordinary readers without the assistance of diagrams, but the principle may be understood by observing a carriage head, the frame of which answers to the boat's timbers, and the joints to the thwarts and stretchers by which the bottom boards of the boat are kept extended when it is open. When the boat is shut, the timbers, by means of hinges, fold together side by side like a closed book. The outer and inner skins of the boat are made of a flexible waterproof material of great strength and durability, and they are firmly secured to the edges of all the timbers, the outer skin to the outer edges, the inner one to the inner edges. The thwarts are jointed in the centre in such a manner that they assist in keeping the boat rigidly extended when it is open. By means of a simple lowering contrivance, formed for the purpose, the boat falls open by its own weight as it is lowered, and the same movement fills with air eight longitudinal cells formed by the spaces between the timbers and the skins, thus giving a large amount of extra buoyancy to the boat, which is, in fact, insubmergible. It is also provided with means for the self-discharge of water—a most important point. It has many further advantages upon which we have not space to touch, but, having examined a working model, we have no hesitation in saying that it is far superior in many points to all other ship's life-boats we have seen, and it would appear to be specially adapted for passenger and troop ships by enabling them to carry boats amply sufficient to accommodate every soul on board.

Hough's Life-boat.—At the Exhibition of life-saving apparatus, which was held at the London Tavern in April, 1872, in aid of the Northfleet Fund, some singular designs were displayed, not the least startling being a life-boat with revolving ends exhibited by Mr. Hough. "The boat is suspended on an axis connecting the two ends, and may be stowed on skids, and, even if filled with passengers, could easily be pushed outboard into the sea, always

maintaining its proper position. The circular globular ends give it a power of flotation which renders it unsinkable, even if swamped." We should like to see this singular invention tried before hazarding an opinion as to its practicability or utility.

Bradford's Globular (Iron) Ship's Life-boat.—This boat has a hollow iron globe fixed in the centre of the boat, and has a diameter exactly one-third of the length of the boat. "It is uncapsizable even under sail, and in the roughest weather." Covered accommodation is provided, and stowage room for provisions, water, &c. The boat can be thrown over the ship's side without danger of being upset, owing to the immense stability given by the globe, and therefore no lowering apparatus is required.

Messrs. Woolfe and Sons' Ship's Life-boat.—This boat is provided with air cases almost like a shore life-boat, and, it appears to us, would prove an excellent life-boat for coasting-vessels. It is 25 feet long and 7¼ feet wide. It self-discharges, through two plug-holes, any water breaking into it, and when filled with water to the outside level, floats, with the crew on board, with the lowest part of its gunwale 20 inches above the surface, "while with 15 passengers, besides the crew, it floats with its gunwales 12 inches above it."

Messrs. Hamilton and Co's Metallic Ship's Life-boat.—This is similar in principle and construction to the boat of Messrs. Woolfe and Sons, but it is built of iron. The distinction between the two latter life-boats, and those—generally worthless—now provided for merchant-vessels is, "that instead of the small cylinders, or cork bags, they have water-tight air-cases, much larger in size, those at their sides being, on each side, equal to one quarter, and the two combined, therefore, equal to one-half the width of the boat, and those at the bow and stern each equal to about one-eighth of the boat's length, while, by being made to conform to the shape of her sides, all water remaining in the boat is kept well in her centre, where it acts as ballast, instead of tending to upset her. . . . . The air compartments form seats, going completely round the boat, and thereby affording a considerable increase of sitting accommodation over that of an ordinary open boat not fitted as a life-boat." Gold medals have been presented by the Society of Arts to Messrs. Woolfe and Sons, and to Messrs. Hamilton and Co., for their boats.

Life-rafts.

Mr. Hurst's Life-raft consists of a double pontoon, bridged over, and can be stowed outside the vessel, flat against the bulwarks. The raft is lowered simply by cutting the lashings, when it instantly falls into the water on its keel. A large description of this raft is carried on bridges by Her Majesty's troop-ship "Orontes," and is launched from an elevating platform.

Christie's Life-raft.—This raft struck us as being one of the most useful, simple, and ingenious things in the Northfleet

Exhibition. It consists of a framework of wood, 30 feet by 15 feet, and is 1 foot 3 inches in depth. The frame is rectangular in shape, and is divided into numerous spaces, each of these forming an air-tight case lined inside with zinc. Several of these cases are allotted to the stowage of water and provisions, and anything that may be required for the navigation of the raft, a number being still left to give it extra buoyancy. The total buoyancy of the raft is 19 tons; 6 tons being allowed for the weight of the raft and provisions 13 tons remain, and would be equal to the support of 100 people.

Both surfaces of this raft are alike, to provide against the contingency of the vessel sinking before it could be launched, in which case the raft might come bottom upwards. "Each surface is fitted with hatches which can be raised on hinges to form a water-tight bulwark around the centre space of the raft. Here could be placed the women and children, whilst the men would have, for their protection outside, life-lines running through stanchions." In case of heavy weather the lids of the outer cases could be raised to form a second outer bulwark. The raft can be carried on the bridge of a steamer, so as to form the roof, and it would be launched by an arrangement causing one end of the platform to be raised, and thus allowing the raft to slide into the sea.

Parratt's Tubular Life-raft.—This raft is composed of five cylindrical air-bags, made of painted canvas, and supporting a flooring of sail-cloth and netting. The centre bag is 24 feet long, and on each side of it are two shorter ones, the entire raft being diamond-shaped. A pole is lashed lengthwise to the centre cylinder, and another extends across the middle of the raft. These stretchers secure the rigidity of the structure. Bulwarks are provided by means of telescopic stanchions of brass, 2½ feet high, fixed ready for use at the four corners of the diamond, and connected by a wire rope, and a strong cord netting round the whole. The cylinders are divided into compartments, having a screw valve for inflation. The central cylinder, however, is always kept inflated, and the remainder are expanded by means of four or five ordinary bellows screwed on to the valves.

On the 10th June last, this structure was subjected to a trial at the Wellington Barracks, London, in the presence of a number of people, amongst whom was Admiral Hall. It was prepared for use, and launched with considerable rapidity, and bore a cargo of seventy persons. With this burden it apparently retained sufficient buoyancy to allow of as many more clinging to ropes attached with that object round the structure. It possesses great stability, as its steadiness was not affected in the slightest by a number of swimmers who repeatedly climbed on to it. When prepared for use, there is no doubt that this raft would prove of most valuable service in case of shipwreck; but although it can be prepared in ten minutes by men familiar with the operation, it is a question whether in the confusion which in

the majority of cases attends such a disaster this would be accomplished with anything like that rapidity, and the loss of the bellows would leave only the central cylinder which would then answer nothing more than the purpose of a life-buoy.

Besides the foregoing, there are many other designs for life-rafts, but we cannot extend our notices, and the foregoing examples will be sufficient to indicate that there is plenty of inventive activity at work with the object of protecting life at sea.

Life-belts.—The general adoption throughout the merchant service of an efficient life-belt is sadly requisite. A large number of life-belts were exhibited at the Northfleet Exhibition, and it is apparent that there is no excuse for shipowners neglecting to equip their vessels in this respect, as we observed many that were suitable as regards efficiency and cheapness. We consider the seaman's life-belt, designed by Captain Ward, as most suitable for general use. An ingenious plan has been invented by Mr. T. G. F. Dolby, whereby an emigrant's tin water bottle, capable of holding three quarts, may be converted into a patent life-buoy. A competitive trial would be desirable to enable the State to decide as to the merits of the belts one or other of which all shipowners should be compelled to adopt. It appears strange that in a civilized country it should be necessary to resort to State pressure in such matters. It would be imagined that shipowners themselves would anticipate legislation by a voluntary act of common humanity.

Boat-lowering Apparatus.—This is of great importance, as we have previously shown. Clifford's plan is in general use in the navy, and has been adopted by many shipowners. It possesses many good points. Various plans appeared at the Northfleet Exhibition, but most were defective in some feature or other, and we observed none that we liked so well, or which met with such general favour, as that exhibited by Messrs. Hill and Clark, and which, in our opinion, eclipses Clifford's. The difficulties which stand in the way of safely, completely, and instantaneously lowering and detaching a boat in case of sudden emergency seem to be entirely overcome by Messrs. Hill and Clark's plan. The requirements are :—1. That the boat shall, when at rest, be perfectly and securely attached to the ship. 2. That it shall be capable of being lowered and detached at a moment's notice. 3. That the ends of the boat shall touch the water concurrently; and 4, that on the instant of the boat being fully supported by the water, it shall be fully at liberty. We will briefly show how Messrs. Hill and Clark meet these requirements. The boat is attached to the ship by a modified form of hook which may be locked under ordinary circumstances. "The unlocking can be performed automatically by means of chains attached to the davit-heads, and fitted with small rings at the ends, which rings are passed under the locks and release them when the boat descends." The boat is to be detached instantaneously by an arrangement of hooks which forms the principal originality of the patent. As it would be difficult, without engravings,

fully to explain the nature of this improvement, it may suffice to say that so long as any part of the boat hangs out of the water it is impossible for it to be detached; but the moment this condition is changed the tackle becomes disconnected by its own weight and the boat is free. The necessary precaution of having both ends simultaneously afloat is provided for by an arrangement of "marriage tackle," the chief feature of which is that no one portion of the lowering rope can act without the other, and both ends passing over one wheel are under the management of one man. This invention certainly appears to be the best that has been introduced to the notice of the public, up to the present time.

A frequent danger is that of a vessel springing a leak as in the now familiar case of the "Megæra." Pumping relieves the ship for a time, but, if land be far distant and the leak large, the pumps cannot save her. At the Northfleet Exhibition we observed several most ingenious and valuable plans, shown by Mr. McCool, for dealing with such an emergency. The method which will be most readily comprehended from description is that of a bar (of any required length) with a screw-bolt attached by a hinge to the centre at right angles. This bolt lies parallel to the bar until both are passed through the leak, when the bolt is drawn back again, leaving the bar outside across the leak. A metal plate, of sufficient size to cover the orifice and padded with an india-rubber washer is then screwed on the bolt and secured by a strong nut.

Collisions and Signals.—In one year only (1870) we find that there were 361 collisions, of which number—

75	were	caused	by	a bad look-out.
16	„	„	„	the omission to exhibit proper lights.
45	„	„	„	neglect or misapplication of steering and sailing rules.
17	„	„	„	want of seamanship.
39	„	„	„	general negligence and want of caution.
47	„	„	„	errors in judgment.
17	„	„	„	inevitable accidents.
105	„	„	„	various other reasons.

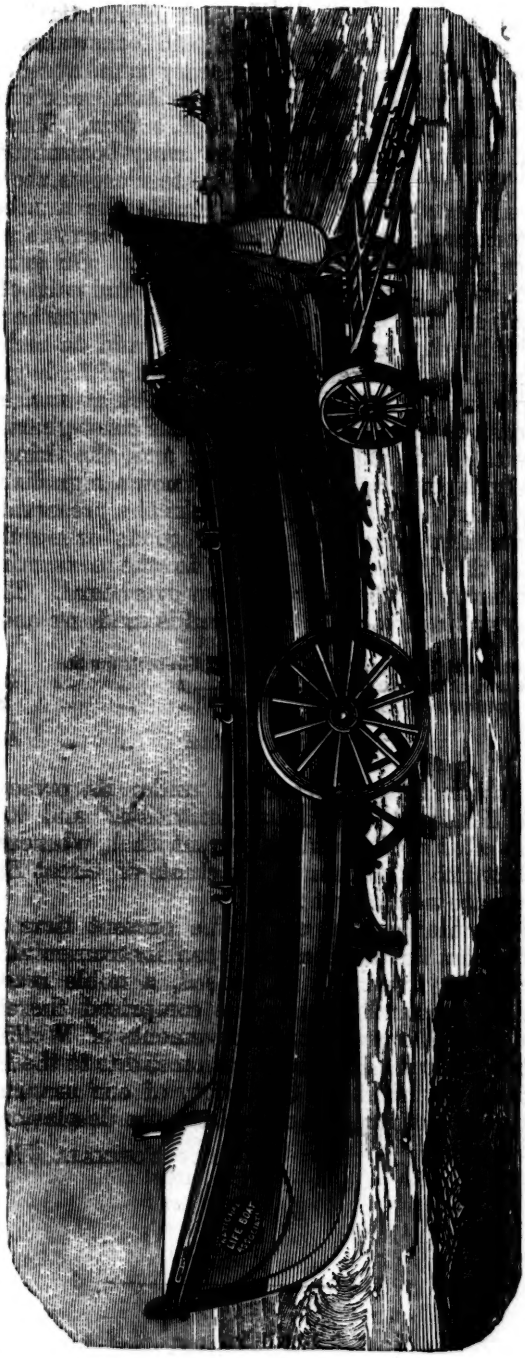
Thus it appears that 192 were clearly caused by want of care and skill on the part of those responsible for the safety of the vessels, and that a large proportion of the 112 lives lost in the total number of collisions were owing to preventible casualties. There is no doubt that a large proportion of collisions are due to a misapprehension of the direction in which at night a vessel intends to steer, and it would appear that the present arrangement of lights is not so efficacious as might be desired. Sir Francis Blackwood, Commander, R.N., has invented a plan for preventing collisions in the night by enabling a vessel to indicate clearly the movement of her helm to an approaching ship. This object is achieved by supplementing the bow-lights (red for *port*

and green for *starboard*) with reflectors, a number of feet above them, and shutters. By a simple arrangement connected with the helm its movement to port closes the shutter over the starboard reflector, leaving only the port light and its reflection visible, and *vice versâ*, when the helm is turned to starboard. The invention of Messrs. Read and Nichols is of similar character, with the essential distinction of showing duplicate lights in the rigging by night, and corresponding semaphores by day. This appears to us the best arrangement for the purpose hitherto brought forward.

III. It now remains to consider the urgent necessity for the establishment, all round our coasts, of the most perfect system which can be devised for affording to shipwrecked vessels timely succour from the land, and to show how far that object has been already attained. This necessity appears to have been practically understood as early as the year 1785, when Mr. Lionel Lukin, a London coachbuilder, patented a life-boat of considerable ingenuity, but which was not brought into use. A calamity, attended with great loss of life, originated, in 1787, Greathead's life-boat, which obtained much favour for a number of years, and was employed on various points of the north-east coast. In 1824, owing to the exertions of Sir William Hillary, the Life-boat Institution was founded. Its first boat was built by Plenty, of Newbury, and was stationed, in 1826, at Douglas Bay, Isle of Man. After passing through many vicissitudes, the Institution obtained for its president the late Duke of Northumberland, and from that period, and under the auspices of Mr. Richard Lewis, the present able Secretary, may be considered to have become fully established in the favour of the public.

The boats now supplied to its stations by the Institution are the offspring of a competition raised by the Duke of Northumberland's offer of a prize of 100*l.* for the best model of a life-boat. This prize was gained by Mr. James Beeching, boatbuilder of Great Yarmouth, but his boat not being considered to answer perfectly all the qualifications of a life-boat, Mr. Peake, of Woolwich Dockyard, was instructed to furnish a design which should, to the best of his judgment, combine all the good qualities of the best of the plans which had been sent in. The result was an improvement of Mr. Beeching's idea, and a number of boats of Mr. Peake's design were subsequently built and stationed on various parts of the coast. In consequence, however, of the water-ballast of these boats being imperfectly secured, several accidents happened to them, and for a time brought the principle of self-righting, on which they were built, into disrepute. By further improvements attributable, we believe, to Captain Ward, R.N., the inspector of life-boats to the Institution, this defect was remedied, and the life-boat now supplied may be said to answer perfectly all its requirements.

The annexed illustration of a Life-boat on a Transporting Carriage, kindly lent to us by Mr. Lewis, will convey some idea of the construction and appearance of this admirable boat.



LIFE-BOAT ON TRANSPORTING CARRIAGE.

The boats of the National Life-Boat Institution, and all belonging to them, are kept in roomy and substantial boat-houses, under lock and key, in charge of paid coxswains, under the general superintendence of local honorary committees of residents in the several localities. Each boat has its appointed coxswain, at a salary of 8*l.*, and an assistant at 2*l.* a year. The crew consists, in addition, of a bowman, and as many boatmen as the boat pulls oars. The members of the volunteer crews are registered, and wherever practicable, at least double the number of men required are entered on the register. Such men are mostly resident boatmen, fishermen, or coast-guardmen. On every occasion of going afloat to save life the coxswain and each of the crew receive alike from the funds of the Institution (whether successful or not) 10*s.*, if by day, and 1*l.* if by night; and 4*s.* each for every time of going afloat for exercise. A reward of 7*s.* is given to the man who first brings intelligence of a wreck at such a distance along the coast as not to be in sight of the coast-guard station or other look-out. A flag hoisted by day, and the firing of a gun twice, quickly, by night, are the well-known signals for calling the crew together. On boarding wrecks the preservation of life is the sole consideration. Should any goods or merchandize be brought into the life-boat, contrary to the coxswain's remonstrance, he is authorised to throw them overboard. The expense of a life-boat station averages 680*l.*, and is made up as follows :—

Life-boat and her equipment, including life-belts for the crew, skids, and transporting carriage	£480
Boat-house (average cost)	200
Total	£680

In 1860, it was fully incorporated under its present title of "The Royal National Life-boat Institution," and it is mainly owing to the efforts of its management that, whereas, in 1852, there were but 125 life-boats on the coasts of Great Britain and Ireland, there are now about 270.

From its commencement up to the present time the Royal National Life-boat Institution has been instrumental in saving more than 20,000 lives. It is, indeed, a noble record. How many deeds of personal heroism are comprised therein, worthy to be ranked with the greatest achievements of Wellington and Nelson! The gratitude of a great nation is due to the Institution which has done so much for the safety of our seamen, and has shielded thousands of happy homes from the desolation of death.

JOHN POWNALL HARRISON.

THE LONDON INTERNATIONAL EXHIBITION OF 1873.

Most of those persons who are acquainted with the reasons which induced Her Majesty's Commissioners for the Exhibition of 1851 to establish at South Kensington permanent Exhibitions in lieu of the proposed decennial international displays, will be ready to admit, we think, that the third of the series—one of the events of the year—has afforded fresh proof that the policy of the Commissioners in introducing this change has been a wise one.

After the Paris Exhibition of 1867 it was evident that huge spasmodic international displays which included, without any kind of previous selection, a vast number of heterogeneous objects in one building, could no longer be continued with success. Such displays were failing to fulfil the legitimate purposes of International Exhibitions which were to afford opportunities of comparison and to show the progress made by art and industry. They had lost the attractiveness of novelty and were consequently becoming unpopular; and there was, moreover, no guarantee that they would not end in a serious financial loss to their promoters.

Her Majesty's Commissioners, as trustees of the fund invested out of the proceeds of the Great Exhibition of 1851, amounting in round numbers to about 180,000*l*., sought to remove these objections by the exhibition, every year, of the fine arts, recent scientific inventions and discoveries, and of two or three branches only of manufacture, their scheme providing for the representation of each distinct manufacture once in ten years. They thought by these means, to use their own words, "to give equal prominence to all branches of manufacture, and thus to create in the public mind a closer acquaintance with them *seriatim* than the vast assemblage of all the world's products could thoroughly effect during the comparatively short space of time they were exhibited collectively."

But apart from the considerations which led primarily to the division of the manufactures into groups—each group to be represented as completely as possible once in ten years—the annual exhibitions of the Royal Academy, Royal Horticultural Society, Royal Agricultural Society, &c., were highly significant of the success which attended limited or exclusive displays. Confined, as they had been from the beginning, solely to their special objects, they had enjoyed for a long succession of years, a large share of public support; their popularity and value, increased; and the Commissioners saw in them an example which might worthily be imitated. The Commissioners hoped, in a word, that what the Royal Academy did for pictures, their own annual displays would do for manufactures and for the objects which fall within the division of the Fine Arts. Another influence at work was the desire on the part of the Commissioners to make the permanent exhibitions conducive to the diffusion and advancement of technical instruction, especially

among the class of skilled artisans. The greater thoroughness with which it was anticipated that each branch of industry would be shown, and the fact that the interest of those of the artisan class anxious and willing to help themselves, would be kept up by the fresh opportunities which would be afforded every year for acquiring a practical knowledge of our manufactures, were especially favourable to the views of the Commissioners, and gave to the annual exhibitions a value which did not belong in the same degree to the decennial displays. The immediate interest in the subject of technical instruction, as stated by Dr. Yeats before the Social Science Association last year, grew out of, *inter alia*, the reports of the British Jurors of the Paris Exhibition of 1867, and correspondence arising therefrom, such as Dr. Lyon Playfair's letter addressed to Lord Taunton; the memorials of Chambers of Commerce; the evidence adduced before Mr. Samuelson's Committee of the House of Commons; and the excellent report on the importance of the introduction into the country of technical instruction, with courses of study as pursued in the technical schools of Germany, France, Belgium, Switzerland, &c., by Mr. Robert Gill, manufacturer, and member of the South of Scotland Chamber of Commerce. During the year both Her Majesty's Commissioners and the Council of the Society of Arts have actively pursued this important subject with the most satisfactory results. They invited the serious attention of the various City Companies to consider what useful lessons might be afforded by the annual exhibitions to scholars in schools under their direction, and their invitation was received by the Companies in a manner which testified their great interest in the subject. Many of the Companies have since expressed their approval of the proposal in a more substantial manner, and have placed at the disposal of the London School Board liberal contributions of money to pay for the admission to the Exhibition of a large number of scholars. Some of the Companies themselves have taken the matter into their own hands, notably the Worshipful Company of Coachmakers, and the Stationers' Company. The latter Company with the view of promoting the technical instruction of persons employed in printing and other trades in connection, caused a course of lectures to be delivered at their hall, by Mr. Ellis A. Davidson, on the arts of printing, typefounding, paper-making, engraving, and woodcutting. Tickets of admission were issued gratis on application, and a very large number of persons availed themselves of the privileges offered. So highly appreciated were these lectures, that it was not possible to find room in the hall for the whole number of persons who presented themselves for admission. We propose to allude to some of the labours in the same direction of the Worshipful Company of Coachmakers, in our remarks under the head of carriages. As a further means of promoting technical instruction in this country, the first of a series of annual examinations in the science and technology of some of the arts and manufactures of the country, was held this

year in conjunction with the examinations of the Science and Art Department. The subjects were cotton, paper, silk, steel, and carriage-building. To Major Donnelly, R.E., a member of the Council of the Society of Arts, is due the scheme on which these examinations have been based and from which it is anticipated, the best possible results will follow. The programme of the examinations, containing a list of the essential and of the optional subjects, a detailed syllabus of the examination in technology proper, and particulars of the prizes offered in each subject, has been published separately by the Council of the Society of Arts.

At the conferences which were held at the Society of Arts in June, presided over and attended by men well known in the educational world, it was resolved to establish a "Trades Guild of Learning," having for its first object the promotion of technical instruction. We have briefly referred to these facts, because they tend to show some of the direct results of these annual International Exhibitions.

We could mention much that has been done during the year, at Manchester and elsewhere, to give to the workman better and more frequent opportunities for acquiring a thorough practical knowledge of the "whole art and mystery" of his craft—the results, direct or indirect, of the actions of Her Majesty's Commissioners—but to do so would be foreign to our immediate purpose, which is to place on record some of the special features of the London International Exhibition of 1873.

Fine Arts.—Noticing the divisions in the order in which they appear in the Official Catalogue, we come first to the Fine Arts, applied or not applied to works of utility executed since 1863. In this division, it must be understood, are included not only painting and sculpture, but fine art as applied to all kinds of work in all kinds of material. The attention of artists and manufacturers was specially called this year to the various classes, seven in number, comprised in this division. The Commissioners represented that hitherto the exhibition of works of fine art had been too much limited to the display of pictures and sculpture dissociated from purposes of utility. Such a complete separation of artistic work from purposes of utility, they went on to say, was only the characteristic of modern times, for that, in the ancient and mediæval periods, the highest art is to be found in alliance with the meanest materials of manufacture. The Etruscans painted, on vases of clay, subjects which still charm us by their beauty of composition and skilful drawing; and the finest works of Raffaelle were designed as decorations for hangings to be made of wool. In these permanent Exhibitions, the Commissioners propose to carry on the work of bringing about a closer alliance between artistic design and usefulness of purpose, by "stimulating the application of the artists' talents to give beauty and refinement to every description of object of utility." In Class V of this section of the Exhibition, which included lace, embroidery,

&c., shown not as manufactures, but for the fine art of their design in form or colour ; and in Class VI, which was limited to designs for all kinds of decorative manufactures, we had no opportunity of comparing our own progress with that of other nations. All the articles which were exhibited in these two classes had been produced in this country, and it is worthy of note that nearly the whole of the designs in Class VI had been executed by students in the National Art Training School at South Kensington. It was in these two classes especially that we observed interesting specimens of fine art allied with objects of everyday use, and too much credit cannot be given to Her Majesty's Commissioners for the encouragement they gave to the designer to aim to produce objects wherein the useful and beautiful were combined. It is a trite subject, but its importance justifies us in calling special attention to this determination on the part of the Commissioners to correct the fault which has prevailed amongst designers of sacrificing utility and construction to mere outward decoration.

In spite of the absence of our neighbours, the French, whose attention had been diverted for the year to the larger and more comprehensive Exhibition at Vienna, a valuable and interesting collection of pictures was formed at Kensington. The collection was of more than usual interest, on account of the principle adopted, for the first time, by Her Majesty's Commissioners, of forming special collections of paintings by deceased British Artists, intended to serve as a homage to the best Artists of the British School, and to give a stamp to the authenticity of their works. Upwards of 300 of the choicest paintings by the late John Phillip, R.A., and Thomas Creswick, R.A., were brought together to illustrate the career of those distinguished artists. These paintings were, by a happy idea of the promoters, intermixed on the walls, instead of those of each artist being grouped together separately. The glowing and powerful tints of Phillip's scenes in Spanish life were thus effectively and agreeably contrasted with the beautiful and tender landscapes of Creswick, some of the latter being enriched by figures and animals, the complementary work of Frith, Ansdell, Cooper, &c. Probably, there has been no more interesting collection exhibited since those of the works of Mulready and of Etty, which were formed by the Society of Arts about a quarter of a century ago. Several of the pictures were graciously lent by Her Majesty the Queen, and the rest were obligingly sent from various private collections. The reputation of the artists is the best and a sufficient guarantee of the value and interest which the collection possessed, and we are glad to find that it is the intention of the Commissioners to follow a similar course in future years. Next year we may hope to see some memorials of the talent of John Constable, Egg, Roberts, and Wilkie, as well as of some eminent painters in water-colours. Interesting specimens of works of artists who had recently died, viz., Mrs. Carpenter, Mr. Mason, and Mr. Rankley, were also lent for exhibition, and

it is proposed to form collections every season of the works of artists who may die in the previous year. His Royal Highness the Duc de Nemours contributed sixteen pictures commemorative of the visit of Queen Victoria and the Prince Consort to France in Louis Philippe's time, and of His Majesty's return visit to the Queen at Windsor Castle in the following year, 1844. A series of water-colour drawings of Nile scenery, by Mr. MacCallum ; fifty paintings by Mr. Tayler, illustrating Indian life and scenery, exhibited in the Indian Court ; eighteen interesting paintings by Stansfield, Cooper, Frith, Linnell, sen., and others, lent by Mr. J. Newton Mappin, of Sheffield ; upwards of three hundred works of fine art by Officers of the Army and Navy, possessing value and interest not only for their artistic merit, but very many of them as pictorial representations of scenes famous in history, added greatly to the attractions of this division of the Exhibition. In the last-named collection, perhaps the most spirited paintings were Colonel Elliot's "Charge of the Heavy Brigade, Balaklava," and "An Incident in the Heavy Brigade Charge at Balaklava," by Colonel Hope Crealock. Besides these, and as some compensation for the loss of French exhibitors, the visitor had an opportunity of inspecting the unrivalled collection of sixteen works of the living French artist Meissonier, lent (with one exception) by Sir Richard Wallace. For careful finish, completeness, and as perfect studies in composition and colour, these paintings, in size resembling miniatures, were not surpassed by any in the Exhibition. Many valuable and highly important works were received from The Hague, Saxony, Bavaria, Germany, Belgium, Denmark, Italy, &c. There was also a large and very interesting collection of paintings by British artists. A number of paintings in water-colours, some of them by David Roberts, David Cox, Prout, Copley Fielding, &c., attracted much notice, although works of the living members of the various Water Colour Societies were not represented. It is to be regretted that time should not have healed the differences which exist between the Societies and Her Majesty's Commissioners, on account of the refusal of the latter to allot space and to allow some of the members of the Societies to assist in hanging at the first of the series of International Exhibitions, and these differences, so long as they continue, must necessarily tend to render incomplete the annual collection of water-colours at Kensington.

In determining that at each of the International Exhibitions the Fine Arts should be thoroughly represented, it was never intended by Her Majesty's Commissioners, as some have supposed, to act in any spirit of rivalry with the Royal Academy, or other permanent body established in London. The principle already alluded to of forming special collections of paintings, is a good proof of the independence of the Commissioners, and of the spirit with which they have successively carried out their original programme. The authorities of the Royal Academy have ever possessed the power of attracting

artists to send their works in the first place to them, and no other body is likely ever to lessen this power. The accommodation in their magnificent new premises is, however, insufficient, and the public are gainers by the fact that many works of great artistic merit, which have been first submitted to, and which have been refused by, the judges of the Royal Academy, find their way each year to the perfectly lighted galleries at South Kensington.

In the Royal Albert Hall, a full-sized photograph of the well-known "Bayeux Tapestry," or, as it is sometimes called, "Queen Matilda's Tapestry," was exhibited. This celebrated piece of needlework, representing the Conquest of England, has on it, worked in various colours, upwards of 1,500 objects, such as horses, dogs, ships, &c., as well as numerous explanatory Latin inscriptions. A volume, which is likely to be of considerable interest, has been prepared with much care, by Mr. Frank Rede Fowke, in which he recounts the history of some of the events represented.

Silk.—To the intelligent visitor, the very complete representation in this year's Exhibition of the various processes used in the manufacture of silk must have been highly interesting and instructive. The occasions are rare when he can witness the operations of this important manufacture from first to last—from the magnanerie, or silk-worm breeding-house, to the reeling from the cocoons, the spinning, weaving of the threads from the singles, trams, and organzines, and, finally, the beautifully finished silk tissues. The wonderful improvements which have been made in the looms have brought these machines under perfect control, and the throwing of the shuttle is now so readily regulated that almost precisely the same work as that formerly produced by the hand, can be produced by the machine. The manufacture in our own country has greatly improved in every respect. There has been a very large increase—last year double that of any previous year—in the quantity of silks manufactured for home consumption and for export. Our sources of supply have also much changed within the last few years. Our colonies have already begun to export silk, and an enormous quantity is annually produced in Japan, the country next in importance to China, where silk-growing is a domestic occupation. The efforts, however, which have been made from time to time in England to produce the raw material have hitherto been almost unsuccessful, and the difficulties of acclimatizing the worm and providing for it its native food—the mulberry leaf—have disheartened the most enterprising of those who have attempted to introduce this important branch of industry. It is well known that in France, and other countries, disease has repeatedly threatened the complete destruction of silk culture. The formidable disease, called by the French "pétrine," which, in 1856, almost entirely annihilated that most valuable species of domesticated moth, known to entomologists as the *Bombyx mori*, led to various discussions and experiments which have been the means of greatly improving the breeding and rearing of every kind of silk-

worm. It will not be out of place here to call attention to the enlarged model of a silk-worm which was lent by the authorities of the South Kensington Museum, constructed to show the complete anatomy of the muscles, nerves, viscera, and spinning apparatus. Most conspicuous were the long glandular tubes which secrete the silk, terminating in a spinneret on the under lip, but the whole of the wonderful interior anatomy of this little insect, which contributes so largely to the wealth and industry of man, was plainly and faithfully represented. The period of spinning the cocoon is not commenced till the silkworm is full-grown, and it usually lasts about five days. The worm then decreases considerably in size, becomes torpid, and is changed into the chrysalis.

The repeated outbreaks of the epizootic disease, to which we have already referred, caused in the infected districts such a great deficiency of eggs, or "grain," that it was found necessary to employ agents to visit countries which had escaped its ravages, to collect cocoons and eggs. This led to the establishment of a new industry, that of "graineurs," the importance of which may be understood by the fact that, to Japan alone was paid in 1868 1,000,000*l.* for silkworms' eggs. These facts are sufficient of themselves to call for renewed efforts to breed and rear the silkworm in our own country, and the importance of the subject has been fully recognised by Her Majesty's Commissioners and the Council of the Society of Arts. Early in this year, an interesting paper was read before the members of the latter by Mons. A. Roland, giving an account of his labours during the last ten years, with the education, in the open air, of silkworm grain; and in the discussion which followed, the Chairman of the meeting, Sir Daniel Cooper, fully endorsed the opinion expressed by Mons. Roland, that in England, where the mulberry-tree would thrive, silkworm grain might be reared. At a subsequent date, the Earl of Carnarvon presided over a conference called by Her Majesty's Commissioners to promote improvements in the silk manufacture throughout the country, and on that occasion there were similar expressions of confidence both from the noble Chairman and other gentlemen present. The question naturally occurs, might not the successful introduction into England of silkworm breeding and rearing help to solve one of the great social problems of the day, viz., the means of finding additional employment for women? The occupation of silk-growing has been already taken up by a great many ladies, and the name of one especially —Mrs. Bladen Neill—will be memorable for her successful efforts to introduce sericulture into the colonies. This lady maintained an artificial winter through the tropics by means of peculiarly-constructed refrigerators, her object being by these means to make the seasons of the antipodes coincide with those of Europe, and thus enable the colonists to supply grain which should be hatched in the European, and not in the Australian, Spring. In the Victorian Annexe Mrs. Neill exhibited a small case of cocoons raised by her, as explained in the official Catalogue of objects exhibited,

on the Murray River, from "grain" obtained from Mr. C. Brady, of Curl Curl, near Sydney, derived from an old Italian race now found to be free from disease. The exhibitor has introduced into Australia, "grain" from the Magnanerie of M. Roland, Orbe, Switzerland. This gentleman's "grain" has been thoroughly regenerated, and has remained perfectly free from disease for the last seven years. It is in great demand in Milan and Turin, and it is confidently expected that its reproduction in Australia will be a great success. A good illustration of what care will do in England was afforded by Captain Mason, who exhibited moths of the *Bombyx mori*, eggs, cocoons, reeled and refuse silk, produced at Yately, in Hampshire. For the benefit of those already seriously interested in the subject of sericulture, we would repeat the advice given by this high authority, M. Roland, who said, "Do not attempt to cure the disease in so minute an animal as the silkworm; it would be lost labour; prevent it by rational education, and you will succeed; for prevention is better than cure."

Whilst the collection of manufactured goods could not be compared in respect of quantity with those exhibited in 1851 and in 1862, it was one equally worthy of attention and study. Glancing at the cases which contained the rich and the costly modern French silks, we were impressed with the signs of a growing taste for an improved style of ornament. There was evidence too of a tendency to adopt a style of surface decoration which is commendable and artistic. Amongst the principal contributors, were several of the well-known Lyons manufacturers, whose specimens, which were duplicates of those sent to the Vienna Exhibition, were perfect in design and finish, though they formed an inadequate representation of the greatest silk industry in Europe. Of the English houses, Messrs. Matheson and Co., of Lombard Street, deserved special notice for their interesting collection of raw and waste Chinese silks, Tusseh cloth and thread, cocoons, &c. Messrs. Lewis and Allenby besides having a fine collection of Lyons manufactures, exhibited silks printed on the warp, known as "Chiné," and an interesting unfinished specimen showing the printed warp before adding the webb. Messrs. Marsden Brothers and Holden, of Halifax, showed specimens of raw silk waste as imported; discharged silk waste; silk in process of dressing, and dressed silk. The discovery of means for utilizing the waste silk, has opened out a new field of industry which is likely to become one of great importance. Messrs. Wardle and Son, of Leek, showed excellent specimens of silk dying on organzine and tram for broad silks, ribbons, sewing silks, &c., and interesting specimens showing the superiority of English over French dyes—all the latter having lost their original colour, whilst the colours of their own dyes remained unchanged. It is generally accepted that Continental dyers cannot equal, and certainly not surpass, English dyers in *tint*. An interesting comparison of dyes of 1853 and 1873 was made by Messrs. Hands and Co., of Coventry. Messrs. Brocklehurst and Sons, of Macclesfield, ex-

hibited specimens of figured spun silk handkerchiefs in gum and boiled off; also some pretty Tusseh scarves. Mr. Chadwick, of London and Manchester, had a good show of plain coloured silks which had the rare advantage of not being weighted.

Mr. Howell Evan, of St. Paul's Churchyard, displayed what was pronounced by competent judges to be the finest collection of Spitalfields silks and moire antiques ever seen. Messrs. Hall and Son, of London Wall, took the lead of the English houses in contributing a complete and splendid collection, consisting of cocoons, various foreign raw and thrown silks, tram and organzine, dyed sewing silks, &c.

Mr. Robertson, Her Majesty's Consul at Canton, sent 92 specimens of silk fabrics, gauze, &c.; and the Turkish Government contributed a good assortment of cocoons and of silk reeled from them. Evidence of the growing taste for costly decorations, was afforded by Messrs. Jackson and Graham who exhibited patterns of magnificent furniture silks, designed by Owen Jones, to be used for covering walls in lieu of paper.

Perhaps the case which was inspected with the greatest amount of curiosity, was that of Messrs. Dickens and Co., of Middleton and Manchester. This firm exhibited specimens of China and Italian tram, weighted to show the extent to which silk can be adulterated prior to weaving.

Ladies have heard of, and no doubt have had from time to time, unpleasant experiences of adulteration in almost every article of domestic consumption; but they were probably not prepared to find so easy an answer to the question why silks are not what they used to be. They probably little suspected that some of the Italian silks which looked so rich and so rare in the shops, owed their stiffness and heaviness to as much as 600 per cent. of a mixture of iron, gambier, and wood containing a large amount of tannin, used in the process of dyeing. That the ladies themselves are chiefly to blame for this appears in a little pamphlet on silk dyeing published by Hands, Son, and Co., of Coventry, from which we extract the following:—

"During the processes of 'taking off' and 'boiling,' silk loses at least a quarter of its weight when received by the dyer. Formerly, before the great increase in the price of raw silk, manufacturers were willing to allow the dyer to employ a black, which caused him to return them the material with a loss of this weight; or at most they only required him to send it back at the weight he received it. But for some years they have required it to be made heavier, and the weighting has more recently very much increased.

"The black silk dresses of our grandmothers, as many can remember, were often, after years of wear, handed down to their children, and possibly descended to their grandchildren. Now that the weighted silks are employed, great complaints are made by the ladies that their dresses are worn out before they have had them many weeks. The manufacturers, we are told, are not wholly to blame; raw silk having doubled in value, and many

of the fair sex being unaware of it, they have been greatly astonished to be shown by their silk-mercers a very thin material; and it was therefore considered necessary for the manufacturer to employ a silk thread which, by the addition of other material, would take the place of two or more threads. The attention of the dyer was therefore called to the matter, and, by adding various drugs to his dyes, he now makes them heavier. The dyeing of black weighted silk is now to a great extent a mere tanning the fibre. Many manufacturers, however, are of opinion that it is better to employ the unweighted silk; and it may be hoped that the time is not far off when ladies, manufacturers, and dyers, will find it to their advantage to use only this class of goods."

The silk ribbon manufacturers of Coventry, were well represented by Mr. Bagley, Messrs. Caldicott, Carter and Phillips, Cox and Co., Franklin and Son, and Green and Son. It was evident that the figured and gauze ribbons formerly so much in fashion, have been entirely superseded by plain and watered faille. In the cases of all these exhibitors both the dyes and the finish of the samples were excellent.

In the manufacture of crapes, England stands pre-eminent, and her reputation was well sustained by the three leading houses of French and Co., of Norwich, Kay and Richardson, of London, and the Norwich Crape Company. Very few velvets were exhibited; the case of M. Gustave Jacobiny, containing silk velvets of Crefeld, being the only one worthy of notice.

A large number of specimens both of the raw material and of manufactured silks, were received from Japan. All kinds of silks were shown from the cheapest to the most expensive. The inferiority in some of the materials was compensated for by perfect harmony of colours. A characteristic of the silk manufacture of that country is the introduction of gold thread into the weaving, which is little attempted in England, or Europe, except for theatrical purposes. The crapes and rich embroideries —the latter having worked on them the well-known symbolic patterns of the Japanese—were magnificent.

A specimen of Japanese writing, beautifully woven in black on a light buff ground, was well worthy of close examination. The translation of the sentence was the truism "the greater the diligence, the worthier the result. The greater the idleness, the poorer the work." The most inferior of their silks were those which were attempted imitations of British manufacture. There was also a good representation of their industry, to which we have already alluded, in breeding and rearing the silkworm. Various kinds of cocoons produced in spring and summer, and specimens of silkworm eggs were exhibited, the latter bearing the required Ifficial stamp as a guarantee that the eggs were genuine. In the sndian court, there was a very interesting collection of various silks and silk-producing insects, consisting chiefly of the silk, &c., of the Anthercea Paphia, L., which is produced in India under the name of "Tusseh" silk.

Ancient Objects.—With the view of increasing the educational value of the Exhibition, Her Majesty's Commissioners obtained collections of ancient objects for comparison with those of modern manufacture. A valuable collection of ancient silks and embroideries, manufactured before 1800, was highly interesting, and contained many specimens which were well worthy of careful study and attention by manufacturers, designers, and art students. Among the more remarkable were an antique silk dress, date 1720, which was painted, lent by Mrs. Carrol, of Kensington Gate; two petticoats, one of pale blue satin, embroidered with wreaths, time of Louis XVI., and the other of pale salmon satin, embroidered with festoons of roses, date Louis XV., lent by Mrs. Holland, of Stanmore Hall; Colonel Gordon's well-known collection of Chinese Mandarin's coats, &c.; some remarkable specimens of old silks, lent by Dr. Diamond, and a variety of old court waistcoats, &c., beautifully embroidered, lent by the celebrated costumiers, Messrs. Simmons and Sons. In the division next to these came a large collection of ancient drinking cups, pipes, &c., which must have been specially interesting to the antiquarian, and which could only be appreciated by careful examination. The great "Kiki," or food bowl, boat shaped, of the South Sea Islanders, was lent by Vice-Admiral Sir H. Denham; and a very exhaustive collection, consisting of 2,378 specimens, of pipes, tobacco graters, pouches, &c., illustrating the history and art of the uses of tobacco from the earliest times, with beautiful snuff bottles of amber, ivory, Chinese and Japanese enamel, &c., was contributed by Mr. Bragge.

Machinery.—Machinery in motion never fails to attract, and probably no objects in this year's Exhibition excited greater attention or appeared to be more highly appreciated than the various machines used in the manufacture of silk. The cocoons which had been produced in the magnanerie of M. Roland were transferred directly to the silk reeling machine of Messrs. Jouffray, of Vienne, France, which, apparently, was of very simple construction, but which required great skill on the part of the manipulator. It consisted of a table with a brass top, having shallow basins filled with water heated by steam. In one of these a number of cocoons were floated, and the operator whisks these about till able to collect the filaments which were drawn up by the whisk from the cocoons. After this the process of reeling commenced, and this brought out the wonderful dexterity of the operator to the great admiration of the bystanders. We have already, in our remarks on the manufactured silks, referred to the important discovery of means for utilizing waste silk, and the machinery, showing what these means are, was exhibited by Messrs. Greenwood and Batley, of London and Leeds. The processes of silk throwing, with machines for winding, cleaning, doubling, spinning, reeling, &c., were shown by Mr. Rushton, of Macclesfield, and Mr. Higginbottom, of Derby; and after the silk has passed through these processes it is ready

for the dyer or manufacturer. Mr. T. Stevens, of Coventry, exhibited an improved Jacquard loom for weaving silk scarves, bookmarkers, &c.; Messrs. Norris and Co., of Cheapside, looms for weaving upholstery silk stuffs; and Messrs. Warner, Sillett, and Ramm, of Newgate Street, a Jacquard loom, which was occupied in weaving 63-inch furniture silk damask after a design by Mr. Owen Jones. The last-named was especially interesting as an example of art and mechanical skill combined. A full description of the Jacquard loom, which will be specially interesting to those who watched the looms at work in the Exhibition, will be found in an able report on the machinery and processes connected therewith, by the Rev. Arthur Rigg, M.A., printed in the "Society of Arts Journal" of the 6th June, 1873.

Another interesting and novel machine was that showing, for the first time in England, the process of macaroni manufacture, exhibited by Messrs. Criscuolo, Kay, and Co., of Gracechurch Street. A heavy marble edge-runner kneads the dough of the Italian wheat, called "semolina;" the kneaded dough is then placed in a cylinder having a number of perforated movable bottoms; is forced through the orifices, cut into lengths, folded, and deposited in the drying-house. The Diamond Rock Boring Company exhibited Beaumont and Appleby's patent diamond prospecting machine for deep bore holes, capable of boring a hole in granite 1,000 feet deep in three months. This machine was seldom seen at work, though numerous samples of its boring operations were exposed. In principle the diamond drill is quite distinct from any other system of rock-boring, and the effects of its rotatory movement is produced by the sheer difference in hardness between the diamond and the rock it is operating upon. It has been admitted that its greatest value is in boring hard rocks, and that in soft rock it would not compare with hand boring. Mr. Tilghman, of Philadelphia, exhibited a remarkable machine, worked by steam power, for carrying out the sand blast process for engraving glass, stone, &c., by a blast of sand. In this process a stream of sand is introduced into a rapid jet of steam or air, so as to acquire a high velocity, and is then directed upon any hard or brittle substance, so as to wear away its surface. Sand driven by an air blast of the pressure of four inches of water, will completely grind or depolish the surface of glass in ten seconds, whilst, it will have little or no effect upon elastic and soft substances, such as indiarubber, paper, &c. If a piece of lace, therefore, be fastened over the surface of a sheet of glass, and the glass be exposed for a few seconds to the sand blast, those parts of the glass which are not protected by the lace will be worn away by the action of the sand, and the pattern of the lace will be reproduced. To produce ornaments or inscriptions on stone, either in relief or intaglio, a stencil of iron or caoutchouc is cemented to the stone, and the sand jet is moved with an even and steady motion over the whole surface, so that all the exposed parts may be cut to the same depth. The sand blast has been applied to a variety of other purposes, such as cut-

ting and dressing mill-stones, re-producing on glass, by the aid of stencils or photographic gelatine, pictures, and even the most delicate line engravings, &c. A simple looking, but ingenious and efficient, machine, called a patent "disintegrating flour-mill," was exhibited by Mr. T. Carr, of Bristol. It consists of circular discs rotating in opposite directions upon two shafts situated in the same line, the faces of the discs being studded with a series of short projecting bars or beaters arranged in successive rings or cages. The wheat, or whatever the substance to be "disintegrated" may be, is passed into the central feed orifice of the mill, through which it is driven with great velocity by the centrifugal force, generated by the rotation of the machine, in flying through which it encounters incessant blows from the numerous bars or beaters which rotate alternately in reverse ways. These bars shatter the wheat into meal by percussion in mid-air, and discharge it in a radiating shower into a casing which encloses the cages as a paddle-box does a paddle-wheel. The flour then falls upon an archimedian screw or worm, which turns horizontally below and conveys it away. A machine precisely similar in principle is used for pulverizing ores, minerals, manures, &c. The machines and processes for the manufacture of boiled confectionery and sugared comfits, and for aërated waters; apparatus for filling and corking bottles; processes of marmalade, mustard, and chocolate manufacture received a great deal of attention, and completed this section of the Exhibition.

Steel and Cutlery.—Though not as strong as it might have been, the exhibition of steel and cutlery was fairly complete. The total number of exhibitors was 98, chiefly British, but interesting specimens of manufactured steel were received from Russia, Sweden, France, Ceylon, Japan, and Brussels. The Russian cutlery was a marvel of cheapness; highly finished knives, scissors, &c., being marked for sale at absurdly low prices. The Sheffield manufacture was represented by about 18 exhibitors of, mostly, small steel goods. A beautiful and complete series of modern English cutlery was exhibited by the eminent firm, Messrs. Unwin and Rodgers, of Sheffield. It was highly gratifying to find that the manufacturers of Sheffield had overcome their reluctance to take part in International displays, and that they had contributed samples of manufacture which fully sustained the long-enjoyed reputation of their town. Messrs. Vickers, Sons, and Co., of Sheffield, sent a series of heavy steel goods, consisting principally of railway axles and tyres, exhibited as specimens of mild steel which had been submitted to various severe tests. Mr. W. Adams, Locomotive Superintendent of the North London Railway, also exhibited specimens of this firm's manufacture, and a cast steel crank axle, made by Krupp, which had travelled 396,262 miles. These objects, together with splendid specimens of solid casting, contributed by Sir Joseph Whitworth and Co., afforded interesting samples of mild steel, produced by the Bessemer and Siemens-Martin processes. Needles of every description were exhibited by several of the Redditch manufac-

turers, by Messrs. Kirby, Beard, and Co., of Cannon-street, and by Mr. J. W. Smith, of Leicester, those by the last-named having the attractive title of "self-acting." A collection of specimens showing the processes of bayonet manufacture, was contributed by the Royal United Service Institution. Messrs. Wilkinson and Son, of Pall Mall, exhibited every pattern of officers' swords, swords in different stages of manufacture, &c., the finished patterns being samples of beautiful workmanship.

A variety of steel goods used for military purposes—such as specimens of steel heads for Shrapnel shell, Martini-Henry rifle, &c., were received from Her Majesty's War Department, Pall Mall.

Notwithstanding the wonderful development of Japan during the last four years, and the extreme anxiety which the Japanese have shown to imitate European practices, her present exhibition of cutlery fell short of what might have been expected. The numerous objects exhibited by the Japanese Government were rude, clumsy-looking, and destitute of finish.

Surgical Instruments.—Closely allied to this class, though not actually included in it, was the collection of surgical instruments, the interest in which was, however, we may fairly assume, almost exclusively confined to the medical profession and the manufacturer. Surgical knives, saws, instruments used by the dentist, &c., are not generally pleasant to look at, and most people are content to admire the science of surgery and the labours and skill of those members of the profession who study and apply it for their relief. But to such of the uninitiated as were bold enough to examine the contents of the cases, there must have been much that was both interesting and instructive. A collection possessing considerable historic interest was that of Signor Castellani, which consisted of specimens of ancient Roman surgical instruments, found in Italy. Old surgical instruments lent by the Obstetrical Society; antique dental instruments, from the collection of the Odontological Society of Great Britain; a knife used in the rite of circumcision, date fourteenth century, lent by Sir Anthony de Rothschild; a case of instruments, date about 1600, from the Royal College of Physicians of London; old instruments for midwifery purposes, sent from the Royal University of Berlin; a selection from Mr. Liston's collection of old surgical instruments, and instruments for lithotomy which belonged to the late John Abernethy, added to the value of the collection as a means of showing, when arranged side by side with the beautifully finished and more simply constructed instruments now in use, the great and gradual progress which has been made in instrumental surgery since the time when cauterizing irons were employed to stop hemorrhage and limbs were amputated with knives of rude construction and without the aid of chloroform. Very few collections of modern instruments were received from foreign countries, but the valuable contributions of several of the most distinguished practitioners, of various societies and hospitals in London, and of eminent manufacturers

and others in all about eighty in number, testified to the importance with which an exhibition of surgical instruments was viewed by the profession in this country.

Carriages.—In no previous Exhibition has there been a larger or a better collection of carriages. Nearly one hundred more were exhibited this year than in 1862, and more than twice the number which was sent to the Exhibition of 1851. They were admirably arranged in the well-lighted and roomy South and East Arcades, and in the French Court, and the success of this Exhibition may be considered to be mainly due to the energy and experience of the Committee nominated by the Commissioners, which consisted of the Duke of Beaufort, K.G., Earl Poulett, Lord Arthur Somerset, Lord Francis Gordon Lennox, and other well-known "Jehus," and several gentlemen possessing a thorough technical knowledge of the coach-building trade as well as valuable information gained by personal experience of the trade in foreign countries. A Special Committee was also appointed by the Worshipful Company of Coachmakers to confer and co-operate with Her Majesty's Commissioners, and a grant of £50 was made by the Company in aid of expenses which were necessary to ensure success. There was little opportunity for comparing the British with the foreign manufacture, only about a dozen carriages of the latter having been arrayed in competition with nearly 200 of the former. Still it was not difficult to decide the merits of our own manufacturers, who with some exceptions, sustained their reputation for excellence of design, material and workmanship. Of the foreign carriages, a Russian droski and sleigh attracted much attention; and a C-spring Victoria, built by Nellis, of St. Petersburgh, was pronounced by competent judges to combine excellence of workmanship with good proportions, strength, and comfort. Another foreign exhibitor, Messrs. Belvallette Bros., of Paris, sent a drag, price £300, a very good imitation of those of the English makers, except that the spring door locking and cut edges of the plate glasses of the doors betrayed its place of origin. One marked difference in foreign carriages is that generally the fore axle is rather shorter than the hind one. The fore and hind wheels do not, consequently, run in the same track, which has the disadvantage of increasing the friction and, of course, the draught for the horses. The art of carriage building has among the best builders, reached a high point of excellence so as to meet the varied requirements of the public, but in the present Exhibition we noticed a great sameness in the kind of carriages exhibited. The variety of carriages is infinite, but for want of a previous understanding among the exhibitors, many of those sent were almost exactly alike. The builders send those which they think they can sell, and, in most cases they keep secret their proposed exhibits with a view to prevent competitors becoming acquainted with their new inventions and improvements and so supplanting them—a by no means uncommon event. In some of the carriages which displayed novelty in

construction, there was a sacrifice of strength and durability which would scarcely be apparent to the uninitiated. The rage for lightness has done this, and has, moreover, been the means of introducing thin straight lines and angles, and finely pointed ends, in the construction of the iron-work. In one of the English carriages, the front wheels turned under a square, and in another under an octagon, instead of revolving under a circular frame, exposing at times some exceedingly unsuitable angles which, with the pointed ends in other parts of the iron work, must be very inconvenient, if not dangerous, at the time of cleaning the carriage. To give the carriage a light appearance, the wood which is partially cased in metal, is often reduced to the lowest possible dimensions, with of course a corresponding decrease in the strength of the parts affected by it.

There were no less than eleven patents amongst the British carriage exhibitors for raising and lowering landau heads, and there must be a regular battle raging between the numerous patentees. Messrs. Rock, the well-known manufacturers of Hastings, claim to possess the original invention and patent, though we think it would be difficult for them to resist subsequent patents, all of which lay claim to some modification or improvement. In Messrs. Rock's landau, fitted with their patent automatic head, the head springs are concealed under the elbows, and by means of a quadrant are connected with the pillars, and so arranged as to give to the head an impulse which is strongest when most needed, and which dies away gradually, avoiding any shock in closing. Alexander McKenzie exhibited a pair-horse landau in an unfinished state, fitted with his patent "automaton" head, half of which is trimmed, and the other half in its skeleton state, showing the mechanism by which the head is raised and lowered. The head can be opened and closed at pleasure by a lady sitting inside, and so easily does the movement work, that the pressure of the little finger is sufficient to place either half of the head in any position. Any contrivance more simple and effective it is impossible to conceive, although Morgan's patent which was in use before McKenzie's was thought of, is equally ingenious and convenient.

It is impossible with the space at our disposal to do justice to the exhibitors in this important section of the Exhibition, and we can only mention the names of a few of those whose exhibits were most conspicuous for excellence of manufacture, or for novelty. The magnificent drag, Four-in-hand Club pattern, of Messrs. Hooper and Co., of Victoria-street, London, was a marvel of ingenuity, and was perfect in design and workmanship. It possessed every possible convenience for carrying luncheons, wines, ice, &c., and by a simple contrivance, a mahogany table could be opened from end to end. The landaus, broughams, &c., of this well-known firm were perfectly put out of hand and had every improvement consistent with lightness, strength, and safety. Their landaus were, of course, provided with a catch, or lever lock, which prevents the door being opened when the window is closed.

This no doubt is the means of relieving many a *pater-familias* from annoyance and expense on account of broken windows, the result, very often, of forgetfulness on the occasion of afternoon calls and shopping expeditions by the fair members of his household.

Messrs. Peters and Sons, London ; Messrs. Thorn, Norwich; Messrs. Thrupp and Maberly, of Oxford Street; and Messrs. Laurie and Marner, Oxford Street, sustained their reputation for well-proportioned carriages of thoroughly good materials and workmanship.

In the French Court, the Queen's State carriage, the State carriage of the Lord Chancellor of Ireland, date 1780, the Speaker's State coach, and the Lord Mayor's State coach, afforded much interest, both on account of their associations and as specimens of art workmanship. The carriage built in Australia for His Royal Highness the Duke of Edinburgh, and specimens of Chinese and Japanese sedan chairs were also exhibited in this Court, which was admirably adapted for their display.

The materials, parts, and furniture of carriages were included in this section of the Exhibition, as well as some interesting photographs and drawings of foreign vehicles, lent by Her Majesty's Commissioners. Many of these reproductions, such as those of the State carriages of Spain, of the Royal carriages of Austria, Germany, and Denmark, &c., must have been of special interest to the art student, as representations of some very finely executed work, and as examples of great artistic skill and good taste.

Wood carvings and ornaments for carriages, were exhibited by M. Eugene Boire, of Paris ; the former were well executed and prettily designed, but were far too elaborate for general use. His fittings for the interior of carriages, consisting of card cases, trays, &c., were simple and inexpensive.

Mr. Boyden, whose name appears to have been omitted in the Official Catalogue, and Mr. Hughes, of Clifton Street, Finsbury Square, exhibited cases of heraldic chased and other ornaments for carriages. It is very much to be regretted that no specimens were received from French metal chasers, who excel in this class of ornament.

Messrs. Lynex and Co. exhibited carriage metal fittings ; and specimens of heraldic painting for panels were shown by Mr. Cowens, of North Audley Street. It was evident that the monogram, either simply encircled by a tasteful design, or painted underneath the coronet or coat of arms, is being generally adopted, and that it has nearly superseded the widow's lozenge. There was a good collection of carriage lamps manufactured by Mr. Moore, of Seymour Place ; of excellent laces and trimmings by Messrs. Fry, of Dublin ; leathers, &c., by Hyde, Archer, and Co., of Paternoster Buildings ; and of patent and enamelled leathers and moroccos by Messrs. Shaw, of Bermondsey. Mr. James, of Westminster Bridge Road, and the New Haven Wheel Company exhibited excellent American wheels and wheel

timber; Mr. Tallerman some Australian wood veneers, polished to show colour and grain; and Mr. W. Cook, of Dock Street, a carriage wheel with steel tension rods and noiseless and elastic tyres.

Doubtless, many visitors to the Exhibition saw with some curiosity the collection of Hansom cabs and "four-wheelers," abelled "In competition for the Prizes offered by the Society of Arts," and had but a faint idea of the object of this old and energetic society in introducing these vehicles into the Exhibition. The value of the efforts which are now being made to rid London of the old, rickety, dirty, and uncomfortable four-wheeler, which has for so many years disgraced "the most civilized city in the whole world," cannot be overrated, and a brief notice of what has been done from time to time in this direction, especially during the year, is deserving of more than a passing notice. So long ago as the early part of February, 1867, the never-tiring energy of Mr. Cole, always at work for the public weal, led him to introduce for discussion at the Society of Arts, the subject of our London cabs, his object being to prove that the then existing legal regulations in reference to the fares, had the effect of rendering the cabs inferior to those provided in other European capitals, and the large municipal towns of this country. About two years afterwards, May, 1869, the Home Secretary said, in reply to a deputation from the Society of Arts, "That the subject of getting rid of the disgrace, which was truly said to exist, of having the worst description of cabs of any capital in Europe, of improving them, and also of not only raising the general standard of cab accommodation, but of having some diversity of accommodation, was under the consideration of the Government;" and he added, "that he did not despair of being able from that year to date a very marked improvement in these vehicles." How far this hope has been realized the public know to their own cost. Various suggestions with a view to the desired improvement followed this, but in July, 1869, the Council of the Society of Arts offered their gold and silver medals as prizes for the best-constructed hackney carriages,—lightness of construction, combined with adequate strength and durability, being special considerations; and their silver medal for the best instrument to be affixed to a cab or other hackney carriage for indicating the fare as between the passenger and the driver, whether by registering the distance travelled, or otherwise, and which instrument shall also indicate for convenience of cab-owner and driver, the total amount earned. On 1st January, 1870, the "Metropolitan Public Act" of the previous session came into operation, and two years later, in December, 1871, the Council of the Society of Arts, no doubt dissatisfied with its effects, appointed a Committee to consider and report what premium could be offered for the improvement of London cabs. In the following April, the Committee appointed, finding that a satisfactory response was not likely to be made unless a prize were offered of a magnitude sufficient to cover the cost of pro-

ducing an improved cab, recommended, subject to specified conditions, the offer of one prize of 60*l.* for the best improved cab; two prizes of 20*l.* each for the two next best cabs; and two prizes of 10*l.* each for the two next best cabs, and the competing cabs to be exhibited in the International Exhibition of 1873. In response to this public spirited offer, about a dozen cabs, chiefly Hansoms, were submitted in competition, all of them possessing, more or less, considerable improvement over those now in use.

We are very far from wishing to decry the laudable efforts of the Society of Arts, and we are hopeful that, aided as the Society has been by a very influential committee, these efforts may be successful; but we must confess that we still fail to see what, given the improved cab, the Council propose to do with the view of introducing it in numbers sufficient to accommodate the public, and to "cut out" the existing cabs. This seems to us to be the real question at issue. Cabs vastly superior to those which ply in the London streets and equal in all respects to those exhibited, already exist in almost all our large provincial towns; and we are inclined to agree with the writer of an article which lately appeared in the "Midland Counties Journal," who said "that the matter was likely to remain where the Society of Arts found it, until a hundred or two of the cabs in daily use in the large towns of the northern and midland counties invade the London streets and ply for hire after a preliminary visit to Scotland Yard." This invasion is never likely to come to pass literally, but there is no reason why there should not be a very triumphant invasion of new cabs built after the pattern of those referred to. First remove the obstacles which have deterred capitalists, such as excessive taxation; and, if necessary, vary the fares—most of the public are always ready to pay a good price for a good article—and there will not be found wanting individuals, or Companies, ready to come forward, to bring about the much needed reform, with satisfactory financial results, if only a start is made with a sufficient number of cabs to give to the hirer a choice between a good and a bad one.

Our notice of this important section of the Exhibition would be incomplete if we omitted to mention the liberality and interest shown by the Coachmakers and Coach-harness Makers' Company for the advancement of technical instruction. The active members of this Company complain that it is impossible for them to obtain skilled and trained draughtsmen, who are qualified to make working drawings of carriages. So great has this want been felt, that an eminent firm of London makers lately sent to Paris, at their own expense, one of their most promising workmen, to obtain a more thorough scientific knowledge of carriage construction, as well as greater facility in producing working drawings. The same firm sent at their own expense to this year's Exhibition, under the guidance of an expert, parties of their workmen connected with the carriage trade, to inspect the carriages, carriage fittings, &c. For several years past, prizes have been offered by the Coachmakers' Company

for competition among persons engaged in the trade of coach-making, to be awarded by the Science and Art Department on the results of the annual examinations in freehand and mechanical drawing; and in addition to these, the Company offered prizes for drawings of carriages, or parts of carriages, to be judged by members of their own Court. The Freedom of the City of London and of the Company was to be presented to such successful candidate as the judges may recommend, and the drawings were to be exhibited in the carriage department of the International Exhibition. The response was insufficient both in quality and quantity, and there is some reason to think that the liberality of the Company requires to be more generally known. There are a large number of persons engaged in the coach-building trade attending the various art and science classes throughout the country, and the proposed training in the technology of carriage building, as laid down by the Society of Arts, will be of especial value to such of them as are willing to avail themselves of the advantages which it offers.

Substances used as Food.—On first entering the galleries appropriated to the exhibition of "Substances used as Food," the race did not appear to us to be altogether one for excellence. Stalls for the manufacture and for the sale of pipes and cigars; rows of ale casks, empty of their proper contents, but with the name of the brewers conspicuous on the outside; piles of wine bottles; a whole case devoted to "Lorne Highland Whiskey;" sealed tins of biscuits and packets of confectionery, and an array of wedding cakes, valuable only as examples of the combination of art and sugar, made us suspect for the moment that the hope expressed by one of the contributors to last year's "Companion," had not been realized, and that this show *had* been "allowed to degenerate into a wearisome succession of advertisements from enterprising grocers, tobacconists, and wine merchants." But we must frankly admit that our first impressions were erroneous, and that, although the display did undoubtedly savour of the "enterprising" retailer, a closer examination satisfied us that the collection was one of considerable value, even though marked, as it was only reasonable to expect it would be, by a good deal of the advertising element. But important and interesting as such a complete representation of substances used as food was, it lacked the value of the smaller permanent collection which has been lately transferred from the South Kensington Museum to the Branch Museum at Bethnal Green. This collection is not limited to the bare exhibition of the articles themselves, but its chief value lies in the fact that it represents the *chemical* compositions of the various substances used as food and illustrates the natural sources from which the various kinds of food have been obtained. Where the processes of the preparation of food admit of illustration, these also are exhibited. In the International display, however, there was much that was instructive from a physiological point of view. Large placards were hung here and there against the walls, showing the composition of

various substances used as the daily food of rich and poor alike. To such as "eat to live," it is surely of the highest importance to know what food is best to be consumed with a view to supply the daily waste of the human body. The composition of milk, one of the most important articles of diet, may be taken as the type of food. Rice, though largely consumed, is poor in flesh and force producers. It is rich in starch, but is deficient in sugar and fat. In this section of the Exhibition which included agricultural productsand manures; grocery, drysaltery, and preparations of food; wines, spirits, tobacco, &c.; there were upwards of 400 exhibitors. Besides these, there were interesting and instructive illustrations of the adulteration of food and drink, prepared by J. Bell, Esq., Chemist to the Inland Revenue Laboratory, and by Dr. Frankland, F.R.S., and exhibited by the Science and Art Department.

The consumption of tea and coffee is enormous and samples of both articles were numerous. Messrs. Goundry and Co., of Cooper's Row, Crutched Friars, made a good show of their "consolidated tea." They represent that the consolidated tea is very much stronger than the same tea not consolidated. The great pressure brought to bear on the leaf crushes the small cells which contain the essential strength and real flavour of the tea, and which is to a great extent lost in using tea not consolidated. Tea in this compressed form was made up into tablets, with half-ounce divisions, each half-ounce being equal in weight to three teaspoonsful; and in "penny-worths for the people," each penny-worth being said to make six good strong cups of tea.

Messrs. Harrisons and Crosfield, of Great Tower Street, exhibited about 100 different varieties of tea and 50 of coffee. To show the extent to which tea was adulterated, they exhibited a sample weighing exactly four ounces, all more or less adulterated with iron. Every particle of "tea" in 1lb. of common Canton gunpowder, had been extracted by means of a magnet, and the amount of spurious matter was equal to 25 per cent. Another sample tested yielded 29 per cent. of spurious matter. This adulteration takes place entirely in China. The appointment by the Government of public analysts has no doubt done much to reduce the practices of adulteration in this country, and, therefore, to contribute to the welfare of the consumer. The contents, however, of the show cases belonging to the Science and Art Department, gave evidence of the need which exists for such interference on the part of the Legislature, since nothing seems so easy as to adulterate articles of every day diet with either deleterious or non-deleterious compounds, or with both.

This year, as last, Mr. Frank Buckland's Fish Museum formed part of the International Exhibition, and attracted a large share of attention. The numerous beautiful casts and stuffed specimens of Thames fish, salmon, &c., and the operations of fish hatching in all its various stages, made up a collection of great value to the student of natural history, as well as of much interest to the mere pleasure seeker.

Cooking and its Science.—How to effect a saving in fuel used for warming our houses and for cooking purposes, is the great question of the day for housekeepers of moderate incomes, and the number of English exhibitors (52) claiming for their respective stoves improvements in construction which shall bring about the desired economy, testified to the importance assigned to this section of the Exhibition. The present high prices of coal have no doubt roused the manufacturers to make attempts to supply the want which has only recently been felt after a long succession of years of plenty, and it may be expected that this dearness will be the means of, at least, reducing in many homes the present waste, which has been estimated at five-sixths of the fuel consumed. An anonymous donor, seriously impressed, no doubt, with the evil consequences of such waste, lately placed at the disposal of the Council of the Society of Arts, through Sir William Bodkin, the sum of 500*l.*, with the view of their devising means for promoting greater economy in the consumption of coal. The Society offered prizes accordingly and required the competing articles to be sent to the International Exhibition of 1874.

The cooking stoves exhibited may be divided into three classes, viz.: (1), the ordinary ranges and kitcheners; (2), gas stoves; and (3), hydro-carbon stoves.

Could we have compared our present cooking apparatus and our modern "Mrs. Beeton," with the cooking utensils and literature on cookery of the Sicilians, or with the seething-pots and kettles of the Romans and the receipt book of Apicius, we should have fairly wondered at the differences between them—at the rude simplicity of the latter contrasted with the luxury and convenience of the former.

The use of gas for heating and cooking is becoming more general, and as its recommendations are more widely known, it is likely to increase in favour. Much of the cooking in the School of Popular Cookery was done by means of gas, and the readiness with which the gas was applied and regulated, the satisfactory cooking, and the perfect cleanliness must have been patent to all the visitors to the lectures.

Messrs. Wright and Co., of Birmingham, exhibited improved round and square gas cooking stoves with atmospheric burners, and they submitted a printed statement of the result of experiments made to show the relative cost of boiling a gallon of water in a copper kettle, by means of a recently lighted coal fire and by a gas stove, and the time required in each case. From their table of results, it appears that by the use of gas there is a saving effected of five to one in money, and two-thirds in time, besides the avoidance of smoke and dust and trouble in lighting.

The saving said to be effected by Messrs. Leoni's Patent Gas Cooking Apparatus, is even more startling. A practical experiment with their "Family Kitchener," showed that a breakfast for 5 adults and 3 children, consisting of coffee, bacon, porridge,

and toast, could be cooked in 20 minutes, for less than three farthings, with a consumption of only 12 feet of gas; and that a dinner for 12 adults and 3 children, could be cooked for $2\frac{1}{4}d.$, in $1\frac{1}{2}$ hours. This economy is mainly effected by an ingenious arrangement for reflecting and utilizing the heat, though whether it will be continued when the brightness of the reflecting surface becomes dull, as in time it certainly will, we had not the means of judging. Reverting to the ordinary ranges, or kitcheners, we noticed the American stoves, exhibited by Messrs. Murdoch and Co., of Cannon Street. These are said to consume only half the quantity of fuel used in an ordinary fire-place and to give out a greater and better diffused heat. Messrs. Adams and Son, of London, exhibited a cooking apparatus on Captain Warren's system, which cooks for 150 persons, with a consumption of four ounces of coal per head per day, and supplies steam and hot water for baths, &c.

In our third division of this section of the Exhibition, there were 3 English and 2 Foreign exhibitors of various cooking apparatus heated by petroleum oil fuel. Bearing in mind how difficult it is to obtain petroleum refined to such an extent as to ignite only at a high temperature, we cannot concur in the statement put forth in the prospectus of one of the English exhibitors, that their Patent Stoves which make their own gas from the hydrocarbon liquid, known as benzoline, are "perfectly safe and sure in their action." Whatever recommendations these particular stoves may possess, we are inclined to think that they are not likely to come into general favour, as there will always be a prejudice to be overcome against such a method of heating.

At the outset of our remarks on this section of the Exhibition, we called attention to the special importance, at the present time, of an exhibition of cooking stoves, &c., but this Exhibition was rendered still more important by the fact that it included not only cooking utensils, but also popular lectures on the science and art of cooking. The object of the "School of Popular Cookery," which was established in connection with this year's Exhibition, was to give illustrations of the best and most economical methods of cooking, both for the working and middle classes. The utensils used were to be those which might be found in most houses of a rental of 40*l.* a year. Whosesoever idea it was to start such a "School"—and here, again, we think we see another instance of Mr. Cole's originality—it is certain that the programme, literally and simply carried out, was the one most needed to bring about the desired reform in our kitchens. That the programme has been well carried out may be inferred from the success which attended Mr. Buckmaster's lectures. We find that, from the opening of the School on the 14th of April, to the middle of August, no less than 31,784 persons paid for admission, and that more than one-third of this number paid the extra charge of six pence each, for the privilege of tasting the food that was cooked. Her Majesty the Queen, with certain members of the Royal Family, visited the School, and listened attentively to Mr. Buckmaster. It could

not have been mere curiosity which attracted so large a number to pay for admission. All classes of society attended, and it may be fairly assumed that all, or nearly all, were sensible of the want which it was the object of the School to supply. It is also worthy of remark that, up to the same date, nearly 14,000 copies of a small book of simple recipes, published by direction of Her Majesty's Commissioners, had been sold in the building, at three pence each.

We are, however, disposed to think that the lectures on cookery would have been still more popular if the programme of Her Majesty's Commissioners had been more literally followed. The dishes prepared and explained were well suited to incomes of from 200*l.* to 500*l.* a year, but no attempt was made, as far as we are aware, to show either the cooking or utensils requisite for the more simple fare belonging to incomes commencing with 50*l.* a year. We have however, since learnt with satisfaction that, at the instance of Mr. Hodgson Pratt, Vice-Chairman of the Working Men's Club and Institute Union, Mr. Buckmaster has delivered popular lectures on cookery, for the information of members of the affiliated clubs and their families. Besides practically illustrating the modes of cooking various simple dishes, the lecturer, day after day, urged his audience to set their hearts and faces against waste of food, and unsparingly rebuked the fairer portion of his hearers for being, in very many instances, as culpable as their servants. It must have been gratifying to Her Majesty's Commissioners to have received the numerous expressions of approval of the work which was being done under their direction. Many of the clergy intimated to Mr. Buckmaster their desire to have the benefits conferred by the School extended to their own parishes, as a means of improving the domestic life of the poor. They were fully alive to the fact that habits of cleanliness and economy in the use of food are helps to moral progress; that dirty homes, bad cooking, and ignorance of the most elementary principles of domestic economy are the most fruitful sources of drunkenness, misery, and want. Mr. Buckmaster's lectures were not confined merely to cooking, but they treated, to some extent, on the hygiène of the subject. The "School," which has been such an undoubted success for this year's Exhibition, will, it is hoped, attract a still larger share of public attention to a long-neglected subject, and will eventually lead to the permanent establishment of a national school for cookery. All previous attempts of the kind have failed. The present School has proved successful because of the popular, practical, and instructive manner in which its teachings were commenced, and carried on to the end, by its earnest and energetic lecturer.

With the limited space at our disposal, our notice of the several divisions of the Exhibition is necessarily very incomplete, and we are fully sensible that in the attempt which we have made to include in a brief report some notice of each one of the various classes of exhibits, we have fallen very short of doing justice

either to the exhibitors themselves, or to the various objects of value and interest which belonged to them. Important collections in the present Exhibition still remain unnoticed, viz., the objects exhibited in the Indian Court, the Colonial products, and the various kinds of apparatus for saving life at sea.

Most of the beautiful objects in the Indian Court were lent by the Indian Government, and all were admirably arranged. In addition to those to which we have already referred, we may mention the magnificent gold and silver embroidery from Benares and Scinde; beautiful specimens of ivory and wood carvings; an extensive collection of hookas, &c., and rich and costly carpets. The flourishing colony of Queensland made a good display of her various products, and coloured photographs of her chief towns and of her mining, pastoral, and agricultural districts, added much to the interest of the collection.

In the Victorian and South Australian exhibition, the visitor could not fail to be struck with the variety of the products. The rich display of the mineral wealth of South Australia, numerous specimens of gold, copper and iron ores, &c.; her fine samples of cereals, wool, dried fruits, sugars, preserved meats, &c., and the very attractive printed tables showing the cheapness of all kinds of provisions and the high rates of wages paid for skilled and unskilled labour, must have been especially tempting to the intending emigrant.

Lastly, but by no means of the least importance, we notice the collection of apparatus for saving life at sea. The objects exhibited might have been divided into three distinct classes:—i. Apparatus for the use of individuals, such as life-belts, waistcoats, &c. ii. Apparatus for the accommodation of a large number of persons, such as life-boats, rafts, &c.; and iii. Rocket apparatus, alarm signals, &c. The value of such an Exhibition cannot be over-estimated, and we entertain the hope that it will form part of the annual display of scientific inventions and new discoveries. Out of the varied contributions of about 100 exhibitors, perhaps the most important were the various kinds of rafts and some illustrations of the successful and unsuccessful methods of lowering boats at sea. A ready and efficient mode of lowering a boat is of the highest importance, and no less than 18 different methods were shown. None of them, however, appeared to possess any improvement on those now in use, such as Clifford's, &c.

An annual exhibition of apparatus for saving life at sea would be of additional value in helping to sustain the interest in, and the importance of, the humane efforts of the National Life-boat Institution—an Institution which has since its establishment in 1824, been the means of saving the lives of 21,500 persons. During the past year it has contributed to the saving of 739 lives from various shipwrecks and 25 vessels from destruction, and its claims to constant and liberal support cannot be too strongly urged.

WORK AND WAGES AT HOME AND ABROAD.

THE almost unprecedented rise in wages which, during the last few years, has taken place in nearly every department of our manufacturing industry, cannot fail to affect, sooner or later, the cost of production in this country, and possibly to give continental manufacturers an advantage which they do not at present possess. The commercial and industrial rivalry between this and other countries has become extremely close since the ancient restrictions on freedom of commercial intercourse have been partially or wholly removed; but, up to the present time, our vast industrial organization, which enables us to combine excellence of quality with extreme cheapness of production, has prevented our supremacy in the markets of the world from becoming seriously impaired, if not destroyed. Unable successfully to rival us, so far as quality and cheapness are concerned, many continental manufacturers have directed their attention to those artistic and scientific features in which not a few of our leading industries are deficient; endeavouring thus, by making up in taste what they lacked in cheapness and quality, to secure a position in the industrial world from which they could not be dislodged. The Bohemian glass manufacture affords an illustration of this. English glass manufacturers can produce articles of much superior quality, at a lower price, but the artistic taste of the Bohemian artisans is wanting. Consequently, the English purchaser is led to prefer the glass vases and ornaments imported from the continent, to those made in his own country. This single instance might be multiplied a hundred-fold, and will in some measure explain the origin of the recent movement in favour of what is termed Technical Education. But it must be remembered that the artistic taste so characteristic of continental industries in general, is not the growth of a few years, but of centuries; that it flourished when the great manufactures of this country were yet in their infancy; and that, despite every possible progress made in the art-education of our workmen, our industrial prosperity and supremacy must continue to rest mainly on the superior quality and cheapness of the various articles produced by us.

If, from any cause, we cease to maintain our wonted superiority of quality, or unduly increase the cost of production, our industrial interests must inevitably become influenced to a corresponding extent. This is a fact which the majority of English Trades Unionists appear to overlook. When they resolutely oppose the introduction of scientific improvements, as in the Sheffield saw-grinding trades, or endeavour to place the inexperienced workman on an equality with the skilled artisan, as in the case of many trades governed by Unionist rules and regulations, the invariable effect is to prevent the various industries with which they are connected from maintaining the high standard of excellence which has hitherto contributed so

largely to their success and prosperity. A manufacturer should be at liberty to avail himself of every scientific discovery or mechanical improvement affecting his particular industry, and to select the best and most experienced workmen he can obtain, whether they be Unionists or not. Unfortunately, the Unions do everything in their power to prevent an employer selecting his workmen. Their object is to compel him to employ the men selected by them. If he refuses, a strike is the consequence. Were membership of these Unions to be, as in the ancient guilds, dependent on a certain amount of technical skill or trade experience, this interference on the part of the Unionists might not prove so injurious to the interests of both employers and employed. It seems that the only conditions which the Unions require of their members are the regular payment of certain fees, and a promise to obey the mandates of the executive committees. They should insist on more than this. Everything which tends to develop the industrial skill of the artisan assists also in strengthening the trade to which he may belong. Had the hand-loom weavers, by means of their trade combinations, assisted, instead of opposing, the introduction of steam-machinery, they would have been spared much of the unavailing suffering and misery endured by them, and have aided their employers in anticipating the action of their continental rivals. The almost universal use of boot and shoe manufacturing machinery in this country has given us the fullest command of the markets, so far as boots and shoes are concerned ; but suppose the Unionist opposition to the introduction of this machinery had been prolonged sufficiently to enable continental manufacturers to obtain, by the adoption of the obnoxious machinery, a fair start of us, where, then, would have been the existing prosperity of the Northamptonshire boot and shoe manufacturing industry?

In like manner, our Trades Unions are too often found unwisely interfering with cheapness of production. Their principal professed object is the maintenance of the highest possible standard of wages. Of course, their members have a right to ask what wages they please, but they have no right to compel an employer to accept their terms. But whether it is always politic to demand high wages is another matter; one which depends upon a variety of conditions. It may, however, be admitted that low wages are not always essential to cheapness of production, but may be the reverse. Wages, be it remembered, always form an important item in the cost of production, and the chief question for consideration is, as to how far wages can be increased without also unduly increasing the cost of the article produced. But there are other circumstances which also tend to increase the cost of production. Among these is the limitation of the hours of labour, accompanied by a corresponding diminution in the quantity of work produced. In the colliery districts such occurrences are frequent, the colliers belonging to the Trades Unions invariably demanding a restriction of working hours as a means of lessening

the quantity of coal brought to the surface, thereby maintaining, if not increasing, the price of fuel, and seriously affecting many leading industrial interests, for the purpose of maintaining their wages at a high standard. The result of this action on the part of the colliers, in the face of an increasing demand for coal, has been to stimulate the search for coal in other countries; and it is possible that, if this unwise policy be persisted in many years will not elapse before we shall become a coal-importing, instead of exporting, country. The principle thus enunciated applies to almost every department of manufacturing industry. Wages cannot be raised, or the hours of labour reduced, beyond a certain point, without seriously affecting the cost of production; unless, indeed, new mechanical contrivances become available for supplementing the labour of the workman. But, on the other hand, every description of labour-saving machinery adopted by us can also be utilised by our industrial rivals abroad, and sometimes to even greater advantage than with us.

We do not go so far as to maintain that the English workman should refrain from seeking increased wages or decreased hours of labour; but we insist that his demands should not be pushed to an extent detrimental to the interests of the trade to which he belongs; otherwise, in his efforts to obtain a whole loaf, he may lose the half already in his possession. The rise in the various rates of wages in this country during the last five years has been variously estimated. In some trades it has been as high as 50 or 60 per cent., and even more; but the average rise may be taken at from 20 to 30 per cent., the hours of labour being diminished in like proportion. That is, we are now paying from 120*l*. to 130*l*. for a less amount of labour than could be obtained a few years ago for 100*l*. Is it possible that we can do this without increasing the cost of production? And if there be no corresponding increase in the cost of production in foreign countries, are we not giving those countries an advantage which they have not hitherto possessed? It is not of the slightest possible use for English employers or workmen to ignore the probable influence of any inconsiderate movement on their part in stimulating the further development of continental industries. The shoe is certain to pinch somewhere. There is a point beyond which wages cannot be raised or the rate of production limited without weakening to a like extent our ability successfully to withstand the crucial test of foreign competition. The continental employer has, in most instances, at his command a vast amount of labour at rates far lower than would be accepted by the lowest class of English workmen; and it needs only a comparatively slight stimulus to render this cheap labour a means of successfully competing with the English manufacturer in the various markets of the world. If textile fabrics of a certain quality can be produced more cheaply in Rouen than in Manchester, their manufacture must inevitably become concentrated in the former place. Hence the importance, both to employers and employed, of becoming more closely acquainted with the actual condition of

the working classes in foreign countries, and the circumstances under which their employment might prove adverse to English industrial interests.

There can be no doubt that, at present, in every possible respect, the condition of the English artisan is far superior to that of his continental rivals. His general hours of labour are lighter, his wages higher, and his lodging accommodation considerably in advance of that known among people of his class in most other parts of Europe. This is indisputably shown in an interesting series of Official Reports from Her Majesty's Diplomatic and Consular Agents Abroad respecting the Condition of the Industrial Classes and the Purchase Power of Money in Foreign Countries, in reply to circulars issued by the late Earl Clarendon and by Earl Granville.* These documents contain the fullest and most authentic information procurable respecting the existing state of the Work and Wages question in foreign countries; and their publication, in the form of Parliamentary blue books, furnishes a significant illustration of the growing interest felt by our legislators in everything tending to influence the existing relations of Capital and Labour.

From the reports thus furnished, supplemented by the personal observations of intelligent gentlemen residing on the continent, we learn that the recent disastrous war with Germany has most seriously affected the industrial prosperity of France; not so much by the general stagnation in all commercial and industrial pursuits, which is the inevitable consequence of war, as by the widely-spread working-class demoralisation in Paris during the siege, and the powerful impetus given to those mischievous Communistic principles which in France have done so much to alienate the affections of the workmen from the employer. Nothing can be more injurious to the mutual interests of Capital and Labour than the persistent efforts made by designing men to show that Employers and Employed are independent of each other. Communism, as preached and practised in France, is simply a war waged by Labour against Capital. The French artisan invariably ascribes to the alleged machinations of Capital the various industrial retrogressions occasioned by the martial propensities of his fellow-countrymen. The love of military glory has ever proved the bane of industrial France. This is shown by the significant fact that the increase of population in France within the last century and a half has been comparatively less than in any other State in Western Europe. In 1845, the annual increase was 200,000 on 35,000,000 inhabitants. At the commencement of the war with Germany the rate of increase had become diminished to 130,000 on 38,000,000. If the present rate of increase in England and France were to continue for the next forty years, England would have doubled her population, while France would have but 45,000,000 inhabitants. This deficiency of population constitutes a serious drawback to the

* Published, by order of Parliament, by Harrison and Sons, London.

natural development of French industrial prosperity, and illustrates a fact too often overlooked by writers on economy, viz., that wages may be kept down by a comparative dearth of labour, as well as by its superabundance. Suppose that a canal had to be cut across a desert, and that no more than 100 labourers could be obtained for the purpose of performing the task. It would be impossible for them to carry out the work, and their labour would be valueless. But if, instead of 100 labourers we had 5,000, how different would be the state of affairs. There would be employment for all at remunerative rates. Consequently, it will be found that sparsity of population is sometimes a greater evil than its superabundance. Else why the persistent efforts of Australia, Canada, and the United States to increase their populations by attracting the tide of emigration from Europe?

The deficiency of artisan labour in France is increased by the system of peasant proprietorships in land, which leads the bulk of the French labouring population to seek a livelihood by the cultivation of the soil. Of the 9,000,000 families resident in France, it is computed that 8,000,000 belong to the industrial classes. Of these, about 3,000,000 are inhabitants of towns. In England the towns absorb about four-fifths of the industrial population. The condition, both socially and intellectually, of the ordinary French farm labourer is in many respects inferior to that of the English peasant. His average earnings amount to 1*s.* 4¾*d.* per day. The highest wages per day are 2*s.* in the Department of the Seine, and the lowest 10½*d.* in the Côtes du Nord. Allowing for the customary number of holidays and other occasions when there is a cessation of farm labour, the average annual wages of the French labourer may be taken at 14*l.*; less than the yearly earnings of a Dorsetshire peasant. As in England, the wife and children of the French labourer are frequently engaged in farm-work, but their collective earnings are not large; the entire wages of a family, consisting of husband, wife, and three children, averaging about 24*l.* per annum, or less than 10*s.* per week. The condition of many of the peasant proprietors is not much better than that of the ordinary labourer, but in numerous instances the earnings of both are slightly increased by devoting the days on which farm-work is impracticable, to weaving, wood-cutting, sabot-making, and similar occupations. In the matter of food, however, the French labourers have an advantage over those of this country, arising from their superior skill in utilising the commonest vegetables and other inexpensive ingredients in the preparation of cheap but nutritious meals. The average rent paid by the French labourer is 1*l.* 15*s.* 2¼*d.* per annum. The yearly cost of clothing for a family of five is estimated at 3*l.* 12*s.* 9½*d.*; sabots taking the place of the more expensive leathern shoes worn by the English peasantry. The blue blouse and trowsers worn by French labourers and workmen are also very cheap, costing only 10*s.*, and wearing from one to two years. But it is difficult to find any one agricultural district in France which can be regarded as typical of the others,

for there is no country in Europe, with the exception of Russia, which possesses so varied a climate; and it is difficult to draw a comparison between the character and social condition of the Departments bordering Germany and those at the foot of the Pyrenees, or between the picturesquely costumed inhabitants of Bretagne and the more indolent labourers of tropical Roussillon. Yet there are several characteristics which the various districts possess in common. The rate of wages is extremely low, and the cost of production unnecessarily high, compared with the same in this country. This arises from the almost exclusive use of manual labour in agricultural operations.

The tendency of the country population to drift into town handicrafts and trades, which has so largely assisted the rapid development of our great manufacturing industries, is not, as before mentioned, perceptible to any great extent in France. The fear of being drawn for the conscription is said to be one cause of this; it renders the future of the young labourer uncertain, and thus prevents him from entertaining a desire to improve his condition. In Paris, the working population are not bad representatives of industrial France. The majority of the Parisian artisans come from the provinces, where the French capital is regarded as the Mecca of the skilled labourer. The highest class of workmen often remain in Paris; but the others, if unable to obtain employment, will, after a time, return to their native towns or provinces. The conditions of labour in Paris vary, as in this country; some artisans working by the task or piece, while others work by time. Again, many workmen carry on their labours in the workshops of their employers, while others execute their work at home, like our Clerkenwell watchmakers and our Bethnal Green shoemakers. This renders it difficult to fix, with any certainty, the average rates of wages in Paris, but they may be said to vary from 2*s.* per day for unskilled labourers, such as carters, builders' assistants, and so on, to 5*s.* and 6*s.* 8*d.* per day for skilled workmen. These, with a few exceptions, are the highest wages in France, and those who obtain them are thoroughly efficient workmen. But there exists one essential difference between the town and country artisans. The former are generally employed, as in the upholstery and cabinet-making business, on only one part—one detail. This, as Mr. Clipperton observes, "produces great excellency, but by degrees the workman is rendered unfit for any other part of his trade, and often in after life it becomes a clog to his fortunes." On the other hand, this system of subdivision of labour enables the various articles to be produced, as in England, in the best manner at the lowest price. In the provinces, the rule is for the workman to be an adept in every branch of his trade; the factory system being comparatively unknown. The cost of living in Paris is very high, lodging and food being much dearer than in London; yet, by dint of steady and sensible economy, many Parisian working class families are enabled to live in a state of comparative comfort. But too often the love of pleasure proves to the

Parisian workman what the passion for drink is to the English artisan—his bane and his ruin. He finds his wages insufficient to procure the luxuries which have become as necessaries to him, hence, to some extent, his continual dissatisfaction and love of change.

One characteristic of the Parisian workman is his professional pride. He is constantly to be seen refusing better-paid work, and preferring to it the less remunerative occupation in which he is known to excel. Sometimes, however, he is enabled, by his peculiar skill and natural talents, to earn as much as 20*s.* per day; but the expensive tastes and vices inherent to the Parisian character will often reduce him to a position less fortunate than that of his humbler brethren whose daily wages range from 3*s.* 2½*d.* to 4*s.* As a rule, the quality of Parisian work, taking that of other countries as a standard, is far superior to the amount of wages paid; but the limited extent of the skilled labour supply prevents the French employers from utilising this circumstance to any considerable degree in their competition with other countries. In all trades in which great bodily strength combined with a certain degree of technical skill is required, as in some of the engineering trades, the French mechanics cannot approach those of this country. An English workman can always perform a greater amount of ordinary work than can be executed by a French artisan, and experience has shown that the effective value of an English workman's labour is in the ratio of 26 to 14, when compared to that of a French labourer; so that the former at 8*s.* per day is really cheaper than the latter at 5*s.*

In the provinces the contrast is equally marked. The manufacture of cotton, woollen, and silk fabrics is very largely carried on in France. The annexation of Alsace by the Germans has made Normandy the present head-quarters of the French cotton manufacturing industry, Rouen holding the same position in that district that Manchester does in Lancashire. The *spécialité* of the French cotton industry is a fine texture, which always sells at a higher price than the coarser productions of the English looms, and which to this day retains its supremacy in the market. The average wages of the French cotton-spinners are from 1*s.* 2⅜*d.* to 1*s.* 7⅛*d.* per day. In Nantes they are as high as 2*s.* and 2*s.* 6*d.* In Lille the cotton operatives obtain from 1*s.* 10*d.* to (very rarely) 2*s.* 11*d.* per day. In the principal cotton manufacturing establishments in Rouen the number of hands employed varies from 200 to 500, the hours of work being from 6 A.M. to 6.15 P.M. As a rule, the French cotton factories are much cleaner and kept more tidily than English mills. A Rouen cotton operative, employed on piece-work, in 1870, could earn from 1*s.* 7⅛*d.* to 2*s.* 11½*d.* per day. In 1860, the rates were from 1*s.* to 2*s.* 4¾*d.* This shows an advance of 30 per cent. in ten years. The proportion of men, women, and children employed in the Rouen factories is: men, 50 per cent.; women, 25 per cent.; children, 25 per cent. A curious fact, bearing on the question of the hours of labour

is mentioned of Amiens. When the Germans were investing that city the Company Anonyme, whose establishments were situated in the beleaguered place, were compelled to work half time. The amount of work thus produced was found to be more than half the production of full time (twelve hours). This led the Company, after the war, to reduce the daily number of working hours to ten, but with what results is not stated.

Elbœuf, one of the principal seats of the French woollen industry, possesses an instructive history. It contains from 9,000 to 10,000 operatives permanently residing within its limits, with a floating population of some 10,000 more. The number of operatives employed has remained almost without change for more than half a century, improvements in machinery, taking the place of deficient manual labour. In 1804, 15,500 pieces of cloth were manufactured, whilst in 1853, 82,000 pieces were made. In 1804 the average price of cloth was 24 francs per metre. In 1858, the use of machinery enabled the average price to be reduced to 12 francs. In 1804, the wages of the operatives were 11½*d.* per day; in 1858, they had risen to 2*s.* 2⅜*d.* A similar increase was observable in the earnings of the female and child-workers. The most industrious and steady woollen operatives are to be found at Flers, where strikes are of great rarity. At Louviers, the social condition of the operatives is very defective. A girl who has become a mother does not attempt to conceal her misfortune, nor does it hinder her from obtaining a husband. At Rheims, from 30,000 to 40,000 workmen are employed in the woollen industry, but the introduction of steam-machinery has seriously affected the prosperity of the hand-carders, and reduced their individual earnings to something like 9*l.* (225 francs) per annum. Supposing the hand-carder manages to lodge himself for 3*l.*, he has 6*l.* wherewith to purchase food and clothing. If he be married and has a child, the earnings of the three would make matters a little better, but the family would still have less than 6*d.* per day to spend in food and clothing. The average wages of the operatives in establishments where machinery has been introduced is 24*l.* per annum. At Lodéve, the operatives earn from 1*s.* 2⅜*d.*, to 2*s.* 4¾*d.* per day.

The head-quarters of the French silk-manufacture are situated at Lyons, which contains 70,000 looms, employing 175,000 hands, nearly all of whom work at home. The average earnings of a clever weaver amount, after all deductions, to 1*s.* 5¼*d.* per day. The great majority of the Lyons workmen inhabit large houses of five or six stories, built expressly for them. The rooms are made sufficiently lofty to take in a Jacquard loom, and are let separately. The largest part of the room is devoted to the looms of which there are from two to six, while the remainder of the apartment, forming a kind of alcove, is divided, thanks to the height of the room, into two divisions, one above the other. The upper part is reserved for the children and assistants, the lower part being used as a bedroom for the parents; also as a kitchen and living room. Child-labour is

much employed in the silk industry. Children between the ages of eight and twelve are permitted to work eight hours out of the twenty-four; but there is no effective supervision, the French law applying only to establishments in which more than twenty persons are employed, whereas in the weaver's room the number rarely exceeds six.

Lace-making is carried on principally in the North of France, about 70,000 females being employed in this branch of industry at Caen and Bayeaux. The lace is of a coarse description and is intended chiefly for home use or export to South America. Large quantities of lace are also made at Tulle, where numerous English workers are employed. Valenciennes has almost ceased to make the lace which bears its name, the workers being employed in making the imitation lace, as manufactured in Belgium, or the coarse lace as made at Caen. At Mirecourt there are about 25,000 lace-workers, all females, who rank amongst the most badly paid workpeople in France, their individual earnings rarely exceeding 4*d.* per day of nearly twenty hours. The general character of the Norman lace-workers is good, notwithstanding the average low rate of wages obtainable by them. At Valenciennes the ordinary lace-worker receives about 1*s.* per day of twelve hours.

Flax-manufactures are not carried on to any great extent in France, save in the northern districts, where they employ English, Scotch, and Irish workers, as well as French. In the Lille district the earnings of the operatives range from 1*l.* 4*s.* to 2*l.* 16*s.* per week of 72 hours, and are regulated by the amount of work done. The hours of labour vary according to the season. In the miscellaneous trades the hours of work and rates of wages vary considerably, according to the district, but in almost every instance the earnings of the artisan are far below those procurable in England, while the hours of labour are often longer and the work more severe. The quality of the work done does not, however, approach that of the English workman, a fact which seems to confirm the assertion that low wages often signify bad workmanship. The purchasing power of money is greater in England than in France. The English workman can purchase for nine pence that which costs the French artisan one shilling, thereby rendering still more marked the contrast between the earnings of the working classes in the two countries. Yet, with all their difficulties, the French provincial workmen are a comparatively thrifty class. The savings banks' returns show that in Marseilles alone there were 27,288 depositors in 1864, and 35,966 in 1869. Two-thirds of these at least were artisans and labourers. In the former year, their average savings amounted to 13*l.* 13*s.* 2*d.* per head; in the latter year they had increased to 14*l.* 4*s.* 5*d.* Since the outbreak of the war with Germany, there has been a falling off to the extent of 15 per cent. in the amount of deposits. The French artisans have also considerable sums invested in Government Stocks and in French and Foreign securities. Were the English working classes to exercise a

similar degree of thrift, the amount of capital at their command would be enormous.

The great difficulty of the French artisan, especially in Paris, is the deficiency of lodging accommodation. In very few places can the workman obtain decent lodgings at a moderate rent. This has led numerous employers to erect suitable dwellings for their workpeople, the outlay being more than covered by the increased steadiness of the workers and the improved quality of the work done. But there are few places which can rival the accommodation at Saltaire and at Halifax in Yorkshire; although in various parts of France the town authorities are beginning to perceive the importance of providing proper dwelling accommodation for the industrial population, and to act accordingly, especially at Marseilles and Lyons, where the artisan possesses a fair chance of obtaining decent lodgings at a moderate rental. In regard to education, the French working classes are extremely deficient as compared with the educational condition of the industrial populations in England and Germany. Out of every hundred conscripts not less than thirty are wholly unable to read. As a rule the town artisan is better educated than the country workman, and, consequently, is enabled to turn his abilities and experience to more profitable account. The doctrines of co-operation are not worked by the French artisans to anything like the extent found in England; the practical good sense and business-like principles which have made the Rochdale Co-operative Associations so successful being almost unknown among the French artisans, who seem too impatient to wait the results of any movement depending on quiet, steady, persevering progress for success.

The Belgian artisans have recently proved themselves formidable rivals of the English workmen in more than one leading branch of industry, the comparative cheapness of their labour tending to keep the cost of production within closer limits than in England. For instance, while the price of necessaries is about the same in both countries, the rate of wages is fifty per cent. higher in London than in Antwerp, Bruges, Liege, and other Belgian industrial centres. It must not be forgotten that so far as general intelligence and ability are concerned, especially in the mechanical trades, the Belgian artisans are scarcely inferior to those of this country. The workshops of Belgium are capable of turning out metal goods in nowise inferior to those of Birmingham and Sheffield, and, under ordinary circumstances, their rivalry might prove most detrimental to the industrial interests of this country. Belgium, however, like all continental countries, lacks the one great advantage enjoyed by this country, an advantage which in some degree counterbalances the increased cost of production here, namely, the security which our insular position affords to capital. The slightest rumour of a continental war is sufficient to affect unfavourably Belgian industrial activity. In fact, nearly every industrial crisis in Belgium is traceable, more or less, to the influence of wars, actual or threatened, on the

continent. Consequently, industrial prosperity in Belgium is subject to greater fluctuations than with us, thereby increasing the social difficulties of the Belgian workman and rendering him careless and improvident in his habits. He becomes familiar with periods of industrial stagnation, during which he has to endure great hardships, with but poor prospects of ameliorating his condition. This has caused him to lend a ready ear to the doctrines of the International Association, that remarkable but most mischievous organization which aims at regulating the conditions of work and wages throughout the whole of Europe. and to impose its own restrictions on the relations subsisting between Capital and Labour. This will explain the recent increase in the number of strikes which have taken place in Belgium of late years, the demands of the men being of a similar character to those generally made by English workmen of their employers, namely, an increased rate of wages and diminished hours of labour. Most of these disputes have terminated in a kind of compromise, but the Belgian employers have no guarantee that the conflicts will not be renewed at the earliest opportunity.

The Belgian workmen are somewhat envious of those in this country. This is not to be wondered at when we consider that in Belgium the defective mode of fiscal legislation causes the weight of taxation to fall principally upon the working classes, thus still further reducing their limited incomes. As illustrating the condition of workmen employed in Belgian manufacturing establishments, Mr. E. A. Grattan states that the average daily wages of factory operatives do not exceed 1*s.* 8*d.*, and that the number of working days per year, after deducting Sundays, holidays, and days of compulsory or voluntary idleness, being not more than 250, the workman's annual income rarely exceeds 24*l.* Such wages would be refused by a Dorsetshire labourer. In England the same description of work, but in less quantity, would obtain the workman from 46*l.* to 60*l.* per annum. In the case of a married Belgian operative, with wife and three children, the labours of the wife or children might increase the family income to the extent of 10*d.* per day, but this would be scarcely sufficient to maintain them in comfort. They must be content with the cheapest food, rarely tasting meat, beer, sugar, or anything save actual necessaries; and even then they can scarcely make both ends meet. The cost of lodging accommodation is moderate, but the majority of working-class dwellings are by no means of the most salubrious character, although improved habitations for artisans are becoming more frequently met with in various parts of the kingdom. The great curse of Belgian working-class life, however, is not low wages or defective dwellings, but the vast amount of ignorance and intemperance which prevails in almost every section of the artisan community, and tends seriously to aggravate their social difficulties.

In Germany the average rates of wages are higher than in France or Belgium, although in some districts the earnings of the

labourers are on a low scale. The lowest class of workmen, comprising all the unskilled labourers, earn from 10*s.* to 15*s.* per week; while the skilled artisans obtain from 25*s.* to 36*s.* per week. In Berlin and other cities there are some trades in which good workmen can obtain even much higher rates of wages, say 45*s.* per week. The purchase-power of the workmen's earnings is largely increased by the extensive manner in which they have availed themselves of the principles of co-operation. Throughout the whole of Germany co-operative associations abound and have proved of considerable service in enabling the artisans to improve their social condition. On the other hand, the development of German industrial prosperity has been much retarded by the numerous trade restrictions which have been in force for many years, not a few being of a most antiquated character. Where these restrictions have become abandoned, they have been replaced by Unionist regulations of equal stringency. Trades Unionism is a formidable power in Germany, where, owing to the influence of the International, it mixes up political and industrial affairs in the most indiscriminate manner. The natural result of the spread of Unionism in the country is shown by the increasing number of strikes in favour of higher wage and diminished hours of labour. The hours of labour vary in different parts of Germany, but there are indications that before long ten hours will form the standard of daily work in all the principal seats of manufacturing industry. In many respects the conditions of labour in most German industrial establishments are not unlike what may be found in England, save that the German artisans, as a rule, are better educated than their English brethren, a fact which renders them the most intelligent and successful of our industrial competitors. The English workman has, however, three advantages over the German artisan, namely, higher wages, greater freedom of labour, and cheaper food, the general price of provisions in Germany being enormously increased by the prevalence of the "octroi" system, the inconveniences arising from which have contributed largely towards stimulating the development of co-operative principles among the German artisans.

As a class the German workmen are quiet, persevering, and industrious; and are frequently found succeeding under circumstances that would be deemed almost hopeless by other artisans, a fact which explains the eagerness with which they are welcomed as settlers in Australia, Canada, and the United States. Unlike the majority of French and Belgian artisans those of Germany are always desirous of improving their social and intellectual condition, a result of the widely-spread amount of education existing amongst them. Education has tended to place the Germans in the foremost rank among European workmen, and but for the exigencies of the national military system, which, as in France, renders such a large proportion of the manhood of the people liable to be called from the workshop into the army, they would attain an industrial reputation of the highest order. The

Germans possess all the qualities requisite for becoming an industrial people, but those advantages are more than counterbalanced by the national necessity for devoting more attention to the arts of war than to those of peace. So long as Germany remains a huge garrison its industrial strength and resources must remain imperfectly developed. Here we have the secret of the continuous stream of emigration from Germany to other countries. The German artisan cannot obtain higher wages in France or England than at home, but he possesses greater facilities for getting employment. In Paris he succeeds because he is willing to work when the Parisian workman prefers remaining idle; in London he succeeds because of the increasing demand for skilled labour and the restrictions imposed by Trades Unionists for the purpose of checking the supply.

But it is in the German agricultural districts that the desire to emigrate is most strongly manifested. The German peasant has numerous disadvantages to contend with in his efforts to improve his social condition. If he wishes to become an artisan, he finds a serious obstacle to the realisation of his wishes in the opposition of the Trades Unions and workmen's Guilds, which invariably display a strong aversion to any increase of the labour supply. Should he succeed in overcoming their objections, he finds his limited wages as a novice in the arts of manufacturing industry insufficient to meet the high prices of food and lodging accommodation, the latter being caused by the restrictions placed upon any increase in the size of the principal fortified towns. The system of passports from one town to another, by occasioning much loss of time to the workman in search of employment, acts also as a deterrent. America and Australia are the favourite resorts of the German artisan emigrants, because in those countries not only are the relations of capital and labour less shackled than in Europe, but there is the possibility of an industrious and thrifty labourer becoming the proprietor of a few acres of land. The earnings and general condition of the agricultural labourers in Germany are about the same as in England, but the extensive emigration which has taken place of late years has tended to raise wages at least 30 per cent. in some districts.

Much that has been said of the German artisan holds good of the Austrian workman also. The Vienna Exhibition has shown that in manufacturing industry Austria has of late years made greater strides than had been generally suspected by her rivals, and that should her industrial progress remain uninterrupted by the rude hand of war, she will become no unworthy competitor with England in the production of articles in which solid workmanship constitutes the principal requisite. Of the various nationalities of which Austria has become the ruling power Bohemia is the most important from the industrial point of view. In that country the general condition of the labourer is not unlike that found existing in Germany, wages being somewhat lower. The earnings of the Austrian and Bohemian artisans rarely approach those obtained by the same class in England; at the

same time the cost of provisions and lodging accommodation is greater than with us. There is no regulation of the hours of labour, save such as may be imposed by the various Trades Guilds or combinations, but the average working-day may be taken at twelve hours. Females and children are largely employed in Austria, the women finding employment in many occupations which in this country are regarded as exclusively masculine, but their earnings are extremely limited. In Hungary the development of manufacturing industry is less marked than in other parts of the Austrian Empire, but under the improved political legislation of recent years the Hungarians have devoted more attention than formerly to the encouragement of the industrial arts. As a rule, the wages gained by Hungarian workmen are extremely low, and their social condition proportionately defective. In Bosnia neither the artisan nor the agricultural labourer possesses much chance of steady or remunerative employment in consequence of the absence of the capital necessary for developing the mineral and other resources of the country, hence large numbers of Bosnian labourers are continually emigrating to California and the South American States, where their services are in demand. The skilled workmen in Bosnia obtain from 1*s.* 6*d.* to 2*s.* per day; unskilled labourers obtaining about 1*s.* The best-paid artisans are the jewellers who receive from 2*s.* 6*d.* to 3*s.* per day. In England the same description of labour brings from 5*s.* to 10*s.* per day, and even more.

Perhaps the Swiss artisan is the most fortunately situated of all the continental working men. This is the result of various causes. "In most countries," observes Mr. A. G. G. Bonar, "the labouring classes are, as a rule, wholly dependent for their means of existence upon that one department of labour in which circumstances have individually placed them, and are, therefore, exposed to the disastrous results of whatever fluctuations may affect it. In Switzerland this is happily so far from being the case that it may almost be said to constitute the exception. The peasant, when not actively engaged in agricultural pursuits, finds useful and profitable occupation in a hundred different ways, from felling timber on the mountains to making portions of the complicated and delicate works of watches. The artisan, likewise, in his leisure moments, or when unable to find work, cultivates the small plots of ground which he often owns, whilst his wife, and even his children, after school hours, contribute more or less directly to the support of the family." In this respect there is to be found a curious parallel between the artisans of Switzerland and Birmingham. We rarely hear of Birmingham workmen complaining of inability to obtain employment, or of their being engaged in disputes with their employers. This arises from their industrial versatility. They can readily adapt themselves to new trades or professions, and, consequently, are more independent than the majority of artisans in other towns. The Swiss is never ashamed of work, and if it be not obtainable in his own country he will seek it in others. Combined with

this love of labour is to be found an habitual thriftiness which enables the Swiss workman, although in receipt of lower wages than are to be obtained in many other countries, to save money, and even enjoy a state of comparative ease. Were the English artisans, with their high rates of wages and abundant means of employment, to display anything like the economical propensities of their Swiss brethren, the whole social condition of the industrial classes in this country would become completely revolutionised. That low wages necessarily mean poverty and suffering is refuted by the example of the Swiss. With wages frequently lower than those of a Dorsetshire peasant, he contrives, by the smallness of his wants, his indomitable thrift, and dislike of idleness, to acquire a more independent position than is possessed by many of our best-remunerated workmen.

In the history of the Swiss working classes we have a significant view of the value of education, if not carried too far. There are comparatively few Swiss who cannot read or write, and not unfrequently we find the artisan rising to the post of manager, and from thence to that of partner or employer, by reason of the educational advantages possessed by him. From his earliest childhood principles of the strictest economy are instilled into his mind, and the habit of saving encouraged by every possible means. He understands the industrial value of education, and, consequently, never omits an opportunity of extending his knowledge. While our artisans are wasting their time and money at the public-house, the Swiss workman is busy with hand or brain preparing for the contingencies of the future. Compared with the wages obtainable in England the average earnings of the Swiss workmen must appear very low. In the Canton of Zurich, for instance, they range from 8½*d.* to 4*s.* per day, the number of working hours being from 12 to 14. In the various cotton and silk factories the rate of wages is far below those obtainable in Lancashire and Warwickshire, although the quality of the labour is scarcely a whit inferior. In the Canton of Bâle unskilled hands in the silk trade obtain about 6*s.* 6*d.* per week, while first-class dyers average 20*s.* In England a first-class dyer would receive from 30*s.* to 50*s.* Nor is this all, for the cost of provisions is not less in Switzerland than in England; but then the purchases of the Swiss artisan are guided by those rules of thrift in which he has been so carefully trained. Like the Germans, the Swiss have successfully adopted the principles of co-operation, extending their application to productive purposes, but the liberality with which the generality of employers treat their workmen, a circumstance which renders strikes almost unknown in Switzerland, tends to retard any extensive development of the latter class of co-operative associations.

In the Netherlands, the rates of wages approximate somewhat more closely to those current in England, but the cost of house-rent and provisions is greater; so that, in fact, every 20*s.* earned in Holland does not go so far as 15*s.* in this country. The Dutch artisans are, as a rule, steady, patient, and skilful; but their work

lacks finish and taste. Holland is not in any sense of the word, a manufacturing country. It is as a maritime people that we encounter the rivalry of the Dutch, who make excellent sailors and fishermen, and are content with lower wages than would satisfy English seamen. But there is one industry, that of diamond-cutting, peculiar to Holland. It is carried on at Amsterdam, and is chiefly in the hands of Jews, who earn from 6*l.* to 7*l.* per week. With the exception of this class of workers the general condition of the Dutch artisans is in every respect inferior to that of their English brethren.

The Danish and Swedish artisans, although steady and industrious, take rank amongst the least remunerated sections of the continental working classes. Resembling in not a few details the German working men the Scandinavian labourers evince the utmost desire to better their condition, and when they find it impossible to effect this in their native countries they assist in swelling the tide of emigration to Canada and the United States, where they are regarded as excellent settlers. Many of the emigrants, however, being tainted with the doctrines of Mormonism, have proceeded to Utah, and largely assisted in bringing to a successful issue the remarkable experiment of forming a vast garden in the midst of an extensive desert. The cheapness and abundance of labour in Denmark and Sweden is likely to affect the interests of English workmen in several ways. The high wages demanded by English carpenters and joiners, and their repeated interference with the operations of their employers, have led to the importation of large quantities of Swedish-made doors, window-sashes, and other descriptions of wood-work, which, after paying for shipping, duties, &c., actually cost less than would have been the case if they had been made in this country. Nearly all the wood-work used in the construction of St. Thomas's Hospital, in London, came from Sweden, where, also, the manufacture of paper from wood and other materials bids fair to attain the proportions of a national industry.

In Southern Europe the general rate of wages is on a low scale, especially compared with the rates obtainable in England, although in some parts of Italy the remuneration obtained by several kinds of art-workmen is very good. In the ship-building, iron-founding, and other handicrafts requiring a combination of manual strength and skill, the workmen can obtain from 18*s.* to 30*s.* per week; there are also numerous trades peculiar to Italy, in which skilled workmen can obtain from 16*s.* to 22*s.* per week; but all descriptions of unskilled labour are very cheap. Strikes are unfrequent, disputes between employers and employed rarely proceeding beyond the preliminary stages. Like the Swiss workman, the Italian artisan is patient, steady, and thrifty in his habits. He contrives to live well and to save money on wages which would scarcely keep an English workman from the workhouse. If he were equally industrious with the Englishman he would take rank amongst the *élite* of the European labouring classes. But the influence of climate is too productive of indo-

lence, although in some of the Italian sea-coast towns the workers display an amount of energy which does them credit. The principles of co-operation are much practised in Italy, the working of the various associations being not unlike those in England and Germany, and care being taken to keep them free from those dangerous Utopian ideas which have, in Spain and France, found practical development in the form of Communism. The quality of Italian work is generally very good, but the principal difficulty of the workman is to gain decent lodging accommodation at a moderate price and to avoid paying too much for provisions. These two drawbacks form serious obstacles against which he is almost powerless to contend, save by living outside the town in which his place of employment is situated; lodgings being cheaper in the outlying villages, where also food can be obtained at lower rates, not having to pay the obnoxious "octroi" demanded at the gates of the town.

The Spanish artisan is not badly paid considering his ordinary expenditure, but the depressed condition of the labour market and general stagnation of industrial enterprise render his position, in several respects, inferior to that enjoyed by the workmen of most other European countries. The average rate of wages is estimated at about 3*s.* per day, the purchasing power of which is equal to 2*s.* 6*d.* in England. But then the wants of the Spanish workman are comparatively few, and he spends less on drink than the English artisan. This causes sums, which in England would represent only a bare sufficiency of wages, to be regarded in Spain as liberally remunerative. In the matter of lodging accommodation the Spaniard has an advantage over the English labourer, the cost for light, airy, and comfortable lodgings varying from 12*s.* to 60*s.* per month, the lower rates representing lodgings as comfortable, healthy, and conveniently situated as could be obtained by the best-paid classes of English artisans. The Spanish artisan is ready, intelligent, and industrious, but remarkably independent. A workman, for instance, throws up his occupation the moment it becomes disagreeable to him, and his employer is obliged to pay him up to the moment of his going away, irrespective of any inconvenience he may himself sustain from the suspension of the work.

In Russia the working classes may be regarded as being in a kind of transition state, in consequence of the recent abolition of serfdom throughout the empire, many workmen who have been serfs enjoying from their owners permission to live and work in the large towns. Again, there seems to be a tendency on the part of the newly emancipated population to drift towards the large cities and towns, agricultural labour being miserably remunerated in Russia. On the other hand, the Russian mechanic appears disposed to emigrate to the United States, but for the political obstacles in the way of his so doing. In every respect the social condition of the Russian artisan is inferior to that of his brethren in Western Europe, and years must elapse before

he can hope to become on terms of industrial equality with them.

From the foregoing summary of the existing state of work and wages it will appear that the English working man, notwithstanding any minor disadvantages under which he may labour, enjoys an exceptionally prosperous condition, compared with that in which his continental brethren are to be found. Not only are the rates of wages higher, and the cost of food, clothing, lodging, &c., lower than in other parts of Europe, but he is untrammelled by any trade restrictions, save those sought to be imposed by combinations of his fellow-workmen, and if he be possessed of ordinary intelligence, steadiness, and prudence, he can, as a rule, do far better in his native land than in any other country, not even excepting Australia or America. All depends on the use made by him of his wages and his leisure time, and on the manner in which he and his employer contrive to work together; for, if ever the industrial supremacy and prosperity of the English artisan becomes seriously endangered, it will be principally from two causes—drink and Trades' Unionism.

JOHN PLUMMER.

RECENT COINAGE OF THE WORLD.

IN the last volume of "The Companion," pp. 102–113, were presented numerous interesting facts in relation to "Coinage at Home and Abroad." Each successive year is productive of important changes in the coinage of various countries throughout the world. It was but a few years ago that the coinage was mainly confined to a few prominent capitals of Europe, with a limited product; the gold fields and silver mines being mainly those of RUSSIA and MEXICO. Now, within the short space of twenty-five years, the whole subject has undergone a complete revolution. The operations of coinage are spread over the globe. AUSTRALIA in the south, and the Pacific States of AMERICA in the west, are adding twenty or twenty-five millions sterling to the previously vast accumulations of gold and silver. Mints are in active operation at numerous new points, even as far as JAPAN in the east, while those of Europe are producing many millions annually.

While the sheets of this work for last year were going through the press, the most marked revolution of the nineteenth century, as to the coinage, was developed. We allude to the radical change in the coinage of JAPAN, a country which for twenty-five centuries, or more, had refused to adopt European ideas or models; and where, for the first time, the coins are made to

conform in sizes, values, and shapes, to those of Europe and America.

Such indeed are the recent and rapid changes and new phases in the world's coinage that a frequent *résumé* of the new movements is of importance, for the information of legislators, bankers, merchants, numismatists, and numerous others.

A writer in the "Encyclopedia Britannica," (Mr. ROBERT MUSHET), justly remarks in his article on this subject, "The coinage of a country speaks with unerring accuracy and truth; and so long as coins are extant, to bear witness to barbarity or refinement, rudeness or taste, ugliness or beauty, clumsiness or elegance, we cannot, as in some other historical researches, be perverted by prejudice or deceived by ignorance."

He further shows that the condition of the coinage of a nation is an index of the social condition of its people and of their progress in the arts, and adds :—

"In order to illustrate the necessary connection that exists between the social and political condition of a nation and its coinage, we need only refer to the rude and ill-fashioned coins of our semi-barbarous ancestors, and contrast them with the elegant and highly-finished specimens of the present day. The forge and hammer, and other manual appliances are now superseded by mechanical contrivances of the highest order, which, with artistic designs and beauty, co-operate to embellish and impart elegance to the coin of the realm."

Hence we find that the artists of Europe and of the United States are aiming to excel each other in the production of coins of superior design and execution, and that the coins of late years exhibit favourable progress and increased beauty when compared with those of the first half of the nineteenth century.

The years 1871 and 1872 have witnessed a remarkable activity in the coinage of the United Kingdom and of Germany. Of the former the annual report of Mr. Freemantle (Deputy Master of the Royal Mint), says :—

"The year 1872 has been remarkable for the movement which has taken place in America, as well as in European countries, towards a reorganization of coinage arrangements, and the adoption of gold as the sole standard of value. In the UNITED STATES the question of change in the laws affecting the coinage had been for some time under consideration, and Congress has had before it a Bill which, by constituting the gold *one-dollar* piece the unit of value, and omitting all mention of the silver *dollar*, which has hitherto in theory held its place as a standard coin, definitely abolishes the double standard, and fairly places the UNITED STATES in the category of nations which have followed the example originally set by this country in 1816, in the adoption of a single measure of value, and of gold as that measure."

Of the increased workings of the Royal Mint, Mr. FREEMANTLE says :—

"The gold coinage of 1872 has exceeded £15,000,000, as against £10,500,000 coined in 1871; the average annual coinage before the latter year having been £5,000,000 only. The coinage of gold still in progress was continued without intermission throughout the year; and, although commenced in September, 1871, is not likely to reach its close before the middle of May, 1873. During this period of eighteen months the amount of gold coin issued will have exceeded £24,000,000, and this amount is the more remarkable as, with the exception of the sum of £2,000,000 mentioned in my report for 1871, as having been withdrawn from the Bank of England, for transmission to Germany, which is understood to have been melted for the purposes of the GERMAN mints, the whole coinage appears to have been legitimately employed for home and foreign circulation in the usual manner."

The following is a summary statement of the number of coins struck at the Royal Mint, London, during the year 1872:—

Denomination.	Number.	Nominal Value.		
		£	s.	d.
IMPERIAL:				
Gold Sovereigns	13,486,708	13,486,708	0	0
,, Half Sovereigns	3,248,627	1,624,313	10	0
Silver Florins	7,199,690	719,969	0	0
,, Shillings	8,897,781	444,889	1	0
,, Sixpences	3,382,048	84,551	4	0
,, Fourpences (Maundy money only)	4,328	72	2	8
,, Threepences	1,297,759	16,221	19	9
,, Twopences (Maundy money only)	4,719	39	6	6
,, Pence (Maundy money only)	8,956	37	6	4
Bronze Pence	8,494,572	35,394	1	0
,, Halfpence..	4,659,410	9,707	2	1
,, Farthings	2,150,400	2,240	0	0
FOR NEWFOUNDLAND:				
Gold Two Dollars..	6,050	2,520	16	8
Totals, year 1872	52,841,048	£16,426,663	10	0

Of the enormous quantity of metal used in the British coinage for the year 1872, the report adds:—

"No less than 672 tons of metal have passed through the Melting Department during the year, and this pressure of work has so fully engaged the attention of officers and men as to leave no time for the prosecution of experiments. One point of interest, however, has been incidentally settled.

"A proposal was made by the Bank of England to the effect that, with the view of facilitating the transactions of the Bank with dealers in bullion, the weight of gold ingots imported into the Mint for coinage should be increased from 200 to 400 ounces. A certain number of the larger ingots having actually been imported and melted, experience has shown that, in their case, the result of the assay does not represent the composition of the mass with such accuracy as in the case of the smaller ingots, as any errors will necessarily affect the computed value

of a larger mass of precious metal, and will be reflected and multiplied in the calculations on which the formation of the legal standard is based."

Some of the prominent coins issued within the past three years will now be illustrated, as a record for future reference by the numismatist, the merchant and banker, the legislator, and the historian.

AUSTRIA.—The present gold coins of AUSTRIA, are the *ducat*, value 9*s.* 4*d.*; the *sovereign*, 27*s.* 10*d.*; and the *new union* coin. The silver coins in use are the *florin*, worth two shillings sterling: *new union dollar*; *rix dollar*; the *scudo*, 4*s.* 2*d.* The *florin* for circulation in HUNGARY is delineated below; with the head of the Emperor FRANCIS JOSEPH.

Florin of Austria (Hungary), Silver, 1869.

Weight, .397. Fineness, 900. Value, 2s. sterling.

The weight of the coin above and those given hereafter is expressed in fractions of the troy ounce, carried to the thousandth.

The latest silver coin of AUSTRIA, was issued by order of FRANCIS JOSEPH, in 1871, under the title of the *union thaler.*

Union-Thaler of Austria. Francis Joseph. Silver, 1871.

Weight, .596. Fineness, 900. Value, 3s. sterling.

The latest gold coin of AUSTRIA is known as the *four ducats*

with the head of FRANCIS JOSEPH, value in UNITED STATES' currency $9·13, or about 1*l.* 17*s.* ; its fineness is 986–1,000.

The *souverain* is no longer coined, but is succeeded by the *four florin* (or *ten franc*) piece, corresponding to the same coin of FRANCE.

AUSTRIA. Four Ducats of Austria. Francis Joseph. Gold, 1871.

Weight, .448. Fineness, 986. Value, £1 17*s.* 7½*d.*

DENMARK.—The latest coin that has reached us from DENMARK, is the *two rigsdaler* of CHRISTIAN IX, approaching the UNITED STATES' *dollar*, and worth about 4*s.* 7*d.*

DENMARK. Two Rigsdaler of Christian IX. Silver, 1868.

Weight, .927. Fineness, 877. Value, 4s. 6¾d.

The principal gold coin of DENMARK is the *ten thaler* piece, worth nearly 33 *shillings*. The other coins in circulation are the *Frederick d'Or* (16*s.* 10*d.* sterling in value) ; *silver specie dollar* (4*s.* 6*d.*) ; *rix dollar* (2*s.* 3*d.*) ; *mark* (4½*d.*) ; and *skilling* (about one farthing English money). The *rix dollar* is divided into six *marks* of sixteen *skillings* each,

FRANCE.—The new Republic of FRANCE has discontinued the head of NAPOLEON I, and NAPOLEON III, in the coins since the year 1870.

The new specimens of the *franc* are intended to keep the people in mind of "Liberté, Egalité, and Fraternité." The following is the latest specimen of the *franc*, issued in the year 1872.

Franc of the Republic. Silver, 1872.

Weight, .160. Fineness, 835. Value, 9½d.

The new *five franc* piece is 900 thousandths fine, which is the standard of the UNITED STATES gold coins. In the new coins of the Republic, there are three figures inserted, to represent *Liberté*, *Egalité*, and *Fraternité;* the weight is four-fifths of an ounce, and the value about four shillings.

Five Francs of the Republic. Silver, 1871.

Weight, .800. Fineness, 900. Value, 4s. 0½d.

The present *five francs* [of 1871] was coined at Bordeaux during the invasion of Paris by the Germans.

We have seen no gold coined in FRANCE since the war of 1870. The *franc* as a coin was first used in the reign of HENRY III, about the year 1575, of the value of 20 *sols*, or *sous*, each.

It was disused afterwards, and was a synonym for *livre*. The *franc* was again brought into use by NAPOLEON I. in the year 1803, and has since maintained its place as the leading coin of FRANCE.

Of the recent coinage of FRANCE, the last annual Report of the Royal Mint, London, says :—

"A bill having been laid before the French National Assembly, authorizing the additional issue of forty millions of francs in bronze coin, a report was presented by the Commission of the Assembly appointed to examine the *proposition de loi*, containing some interesting information as to the bronze coinage now in circulation in FRANCE. From this report, which is dated the 22nd February, 1872, it appears that, in obedience to a law passed in May, 1852, 48,500,000 francs in bronze coin were issued in exchange for the coinage then withdrawn from circulation ; and that, as that amount was found insufficient, another law was passed in July, 1860, authorizing a further coinage of 12,000,000 francs, of which 11,307,000 were issued. At the beginning of 1872, therefore, the bronze coin in circulation consisted of 59,807,000 francs, in pieces of 10, 5, 2, and 1 centimes ; or, after the issue of the balance of the amount authorized in 1860, and then in course of coinage (viz., 693,000 francs), 60,500,000 francs. This sum the Commission represented to be equal to 1 franc 60 centimes per head of the population ; the issue in ITALY being 3 francs 10 centimes, and in BELGIUM 2 francs 26 centimes per head ; and after observing that, in consequence of the dearth of gold and silver coin in FRANCE, bronze coin was called upon to play a more important part than hitherto in payments, they recommend that, instead of the proposed coinage of 40,000,000 francs, which appeared to them excessive, a maximum issue of 10,000,000 francs should be authorized in pieces of 10 and 5 centimes.

"A law was passed to this effect in August, but the Government, acting upon the discretion accorded to them, have limited the amount to be coined immediately to 1,000,000 francs. It will be seen, therefore, that the total authorized circulation of bronze coin in FRANCE is 61,500,000 francs, or 2,460,000*l.* ; whereas the total amount of bronze coin issued for circulation in this country and the colonies in which the imperial coinage is current, up to the 31st of December last, was only 1,099,000*l.*"

FRANCE. Two Francs of the Republic. Silver, 1872.

Weight, .320. Fineness, 835. Value, 1s. 7½d.

The *two franc* piece of the new Republic bears similar legends

to those of five francs and one franc, and maintains fully the high reputation of the French Mint.

FRANCE coined, in round numbers, between 1848 and 1869, the large sum of 260,000,000*l.*, more than twice the amount coined in ENGLAND in the same period, although we have so much more trade, and virtually coin for BRAZIL, PORTUGAL, EGYPT, and other countries, as well as for ourselves. Nearly half the new coinage had in fact been for FRANCE, which has thus by itself absorbed a large part of the new gold. Of course it may have been enabled to do this because of the gold falling in value, but the absorption followed so quickly on the events of 1848, that it would operate in time to check a very extensive fall. It was in the first years that FRANCE coined most—

French Coinage.

	Total.	Annual Average.
	£	£
Four years (1848–51)	16,880,000	4,220,000
Five years (1852–56)	71,471,000	14,294,000
,, ,, (1857–61)	91,525,000	18,305,000
,, ,, (1862–66)	49,011,000	9,802,000
,, ,, (1867–71)	30,914,000	6,163,000
	£259,801,000	£10,825,000

The new motto of the Republic is plainly seen on all the new silver coins, with a representation of a head of LIBERTY.

The following is an illustration of the *half franc*, known in trade as fifty centimes, where the same characteristics prevail.

Half Franc. Silver, 1871.

Weight, .80. Fineness, 835. Value, 4½d.

The fineness of the above coins is a trifle below that of the five francs, and of the UNITED STATES' small silver coins.

GERMANY.—The *mark* maintained a circulation in BRITAIN and on the continent for many centuries. It was a Danish mode of computation, and was probably introduced into BRITAIN in the ninth century. It is mentioned in a treaty between King Alfred, of Britain, and Guthrun, the Danish King, about the year 878.

The following is a fac-simile of the new *twenty marks* of GERMANY. The marks mentioned in the treaty of 878, were of gold. There was also a silver mark early in the tenth century, esti-

mated at one hundred pennies in value ; and in the year 1194 (RICHARD I.), at one hundred and sixty pennies, or thirteen shillings and four pence.

Twenty Marks. William. Gold, 1872.

Weight, .256. Fineness, 900. Value, 5 francs less than the British sovereign.

The new coin above, of the GERMAN EMPIRE, is accompanied by the *ten marks* of gold, one-half in weight and in value.

The latter is coined at the rate of 125·55 pieces, out of one Mint pound (or half kilogram) of gold, nine-tenths (900-1,000) fine. These coins do not assimilate with other new coins of the Continent. A large issue of this was commenced in the year 1871, the material for which is the bullion and coin lately transmitted by FRANCE on account of the indemnity to GERMANY.

Mr. Freemantle in his valuable Report on the Coinage adds, in reference to GERMANY and the NETHERLANDS :

"In view of the changes contemplated in the currency of the GERMAN Empire, the DUTCH Government has, during the past year, considered the position occupied by HOLLAND in regard to her single silver standard, and in October a Royal Commission was appointed to inquire into the monetary system of the NETHERLANDS, and to report the measures which, in their opinion, should be adopted, in order to provide against the disadvantages likely to arise in consequence of the steps recently taken by neighbouring States in reference to coinage.

"The Report of this Commission, referred principally to the recent movement in GERMANY, and recommended the immediate, though provisional, introduction of the double standard of gold and silver, and the provisional suspension of the coinage of silver standard money. Steps having now been taken for the introduction of the single gold standard throughout the GERMAN Empire, the DUTCH Government have suspended the coinage of silver till November, 1873, and, should the views expressed by the Royal Commission prevail, will probably follow the example of GERMANY, by abandoning the silver standard altogether."

Of the enormous gold coinage of GERMANY since the late war the BRITISH Mint Report states :—

"The coinage of gold in GERMANY has been carried on with energy during the year 1872, and the total amount of coin already struck is understood to exceed 31,000,000*l*. Pending the final adoption of the single gold standard, however, none of this coin has been issued for general circulation, and it is only since the

beginning of the present year that a bill has been introduced into the REICHSTAG establishing gold as the sole standard of value, and containing provisions for the demonetisation of the silver and the regulation of the bronze coinage. Under this law the seignorage to be levied on the silver token coinage, 11·111 per cent., will considerably exceed that imposed in ENGLAND, or FRANCE, which is about 9· and 7·784, respectively.

"The Bill proposes to limit the amount of the silver tokens issued to ten marks per head of the population of the Empire, in order that the several State Governments may not be tempted to issue a coinage, at their own profit, larger than is required for legitimate circulation; and it further provides that the new system shall not come into operation until there is sufficient gold coin in the State Treasuries to make the experiment safe, and that six months' notice is to be given of the law. This period, however, may be shortened by the State Governments, if they should so prefer, and it is probable that the new system will be inaugurated with as little delay as possible."

GREAT BRITAIN.—The origin of the *sovereign*, as a coin, is traced back to the year 1449, three years before the discovery of AMERICA. In that year the Master of the Royal Mint was

GREAT BRITAIN. The Sovereign. 1872.

Weight, .256.6. Fineness, 916.5.

ordered "To make a new money of gold according to the print, and form of a piece of lead annexed to the patent." The coin to be double the weight of the *royal*, a coin then in use. Twenty-

The St. George Sovereign of 1872.

Weight, .256.6. Fineness, 916.5.

two and a-half of the new piece to be coined out of the pound weight in the Tower.

The *half-sovereign* followed in the year 1504 in the reign of

HENRY VII. At that period were current the ENGLISH coins named *royal*, *half-royal*; the fourth part of a *royal*; the *angel*; the *half-angel*. The smaller coins used in change were the *groat* and *half-groat*.

ITALY.—The last coin of the Pope is known as the *two lire*, issued in 1869, and worth a little over eighteen pence. The head of POPE PIUS IX is conspicuous, with the legend *Stato Pontificio*.

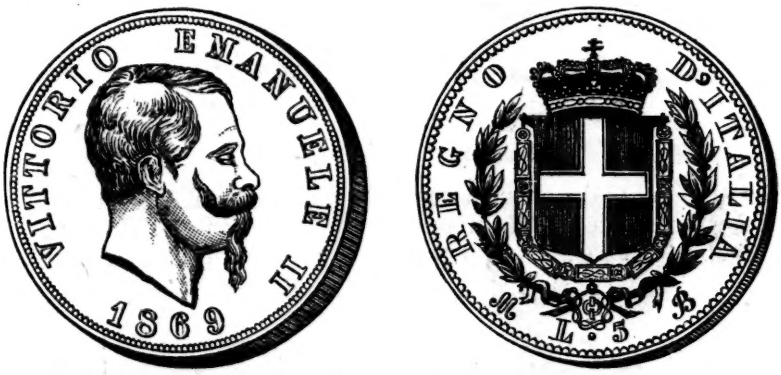
Two Lire of Pope Pius IX. Silver, 1869.

Weight, .320. Fineness, 835. Value, 1s. 7⅜d.

The papal coinage ceased in the year above-named (1869), and is succeeded by that of VICTOR EMANUEL.

The coin currency of ITALY is now the *twenty lire* of gold, worth nearly sixteen shillings, the *five lire* of silver, worth four

KINGDOM OF ITALY. Five Lire. Victor Emanuel. Silver, 1869.



Weight, .800. Fineness, 900. Value, 4s. 0½d.

shillings, and the silver *lira* (of a reduced fineness), worth nine pence. The *five lire* presents the head of VICTOR EMANUEL: and the legend *Regno d'Italia*.

The coinage of ITALY in former centuries is amply illustrated by writers of note: viz., Argelati 1759; Bellini 1755-1779; Carli Rubbi 1754; Firravanti 1734; and Zanetti 1789.

MEXICO.—The republic continues to coin the dollar, called there the *peso*; with a value in U.S. currency of $1.06½, or 4*s*. 5*d*., the annexed is a fac-simile.

The *peso* is equivalent to the *piastre* of eight reals. We have

no official record of a late date as to the production of silver in MEXICO; or the amount of the coinage. Owing to the political disorganization of that country the dollar of MEXICO has main-

MEXICO. Peso (or Dollar) of the Republic. Silver, 1869.

Weight, .867.5. Fineness, 903. Value, 4s. 4½d.

tained a consistent value for many years, and has been largely used by merchants for transmission to CHINA, where it is more valued than the gold coins of EUROPE or the UNITED STATES.

NETHERLANDS. The *guilder* maintains a large place in the coin currency of the NETHERLANDS. The gold piece known as *ten guilders*, is worth at the U.S. mint $3.97 or 16*s.* 6*d.*, a fraction above the *twenty francs*. The 2½ *guilders* is the leading silver coin of the country.

NETHERLANDS. Two and a half Guilders. William III. Silver, 1869.

Weight, .804. Fineness, 944. Value, 4s. 3d.

The last specimen of 2½ *guilders* is dated 1869, with the head of WILLIAM III, valued at $1.03 at the U.S. mint, or about 4*s.* 3*d.*

On the 30th of October, 1872, an ordinance was confirmed by the King of the NETHERLANDS, for the appointment of a Commission to enquire into "the disadvantages which might accrue to the NETHERLANDS in consequence of the measures recently adopted in neighbouring States, and more especially in GERMANY,

with reference to the question of currency; and to report the measures which, in their opinion, should be adopted in order to provide against any anticipated evils." This Committee made its Report in 1873, from which we extract as follows :—

"The NETHERLANDS may anticipate great difficulties in the future. The quantity of silver in circulation in this country is already very considerable, and increases from day to day. Even taking into account a not inconsiderable quantity exported to the Dutch Indies, the sum total of standard silver coin now circulating in the mother country may be assumed at 125 to 130 million florins. The amount is, however, constantly on the increase, in consequence of the fresh coinage which takes place from time to time, and which becomes necessary on account of the occasional scarcity of silver."

PORTUGAL.—Among the recent contributions to numismatic science, is the gold *Coroa* of PORTUGAL, or 5,000 reis, equal to $5.80½ of U.S. metallic currency, or twenty-four shillings sterling. This is issued with the head of LUDOVICUS I. The following is a facsimile.

PORTUGAL. Gold Coroa or 5,000 Reis. 1871.

Weight, .308. Fineness, 912. Value, £1 4s.

The silver coin, issued in 1871, as 500 *reis*, has a value of two shillings English money, being valued more commercially than it is when melted at the mints. To preserve a due relation to the

500 Reis of Portugal. Silver, 1871.

Weight, .400. Fineness, 912. Value, 2s. 0⅝d

gold coin above, it should be worth, with us, about two shillings and five pence.

The *coroa*, or 5,000 reis, is just equal to the gold crown of PORTUGAL. There are current in PORTUGAL gold coins of 4,800 reis, 5,000 reis, and 8,000 reis. The chief silver coins are the *testao* (100 reis); the *crusado moro* (486 reis); and the *milrei*, or dollar (1,000 reis).

RUSSIA.—But slight changes have been effected in the coinage of RUSSIA, of late years. The silver piece of 20 *copecks* was largely issued in the year 1870, according to the annexed engraving.

There are still in use the five *rubles* of gold, value 16*s.* 4⅝*d.* sterling. The only other gold coin of RUSSIA is known as the *ducat*. Besides these is the silver *ruble*, value 3*s.* 2¾*d.*, or 70 cents 4-10ths of UNITED STATES money, also the silver *poltina* (or 50

RUSSIA. Twenty Copecks. Silver, 1870.

Weight, .11.2. Fineness, 875. Value, 7¼d.

copecks) value about 40 cents UNITED STATES currency, and the silver pieces of 25 *copecks*, 20 *copecks*, 15 *copecks*, 10 *copecks*, and 5 *copecks;* a platina coin of 6 *rubles*, value about 19*s.* 6*d.*, and platina *ducat*, value about 9*s.* 6*d.* Platinum is no longer used by their mints. The smaller silver coins have an obvious reduction in weight, and are more used as tokens, their mint values being below the legal standard.

RUSSIA produces gold annually, about four millions sterling in value, or twenty millions of dollars. The URAL MOUNTAINS produce gold, silver, and copper largely, and in fine qualities.

SPAIN.—The new coins of SPAIN show the important political

SPAIN. Five Pesetas of Amadeo I. Silver, 1871.

Weight, .800. Fineness, 900. Value, 4*s.* 1*d.*

changes of that country. The new five *pesetas* of 1871, have the head of AMADEO, who has already abdicated, leaving his effigy among the silver currency of the people. This coin approaches in value the silver dollar of the UNITED STATES, or nearly four shillings sterling.

Besides the new silver coins of AMADEO, the Spanish mint is

Five Pesetas of the Republic of Spain.

Weight, .800. Fineness, 900. Value, 4s. 1d.

represented by the five *pesetas*, having the full-length recumbent figure of republican SPAIN, stretched from the Pyrenees to Gibraltar!

This was replaced, in 1871–2, by the coin of AMADEO. This in turn, will soon be relinquished for another coin, of the new Republic. The five franc piece of FRANCE circulates freely in SPAIN.

SWEDEN.—The latest coin of the Swedish mint is the four *riksdaler* (or specie daler), represented by the following engraving.

SWEDEN. Four Riksdaler, or Specie Daler of Sweden.

Weight, 1.092. Fineness, 750. Value, 4s. 7½d.

It bears the head of CARL XV, and is worth four shillings and

seven pence sterling. A new gold coin, under the name of *carolin*, has been issued by SWEDEN, equivalent to ten francs, according to the FRENCH standard.

The gold *ducat* of SWEDEN is worth nine shillings. Their gold *carolin* is worth nearly eight shillings English. SWEDEN produces gold and silver in small sums only. Its iron is of the most noted quality. It produces also lead, nickel, and zinc.

A radical change in the Scandinavian coinage was adopted in the year 1872. We are indebted to Mr. FREEMANTLE'S able mint report for the following synopsis :—

"Steps have also been taken in the Scandinavian Kingdoms for the adoption of the gold standard as the basis of their monetary system, and in the summer an international commission, consisting of three delegates from each of the three Governments of Sweden, Norway, and Denmark met at Copenhagen to consider the question of the unification of the coinages of those countries.

"They reported that, although anxious to devise, if possible, a scheme by which the three States could have joined one or other of the great monetary systems of Europe, they were reluctantly compelled to admit that there were apparently insuperable obstacles to such a course, and to recommend a less comprehensive measure, applicable to the three Northern Kingdoms only.

"Delegates from the three countries again met at Stockholm in the month of November, and on the 18th of December, 1872, a definite Convention was signed, creating two principal gold coins, common to the three Kingdoms, and constituting the "*crown*" the common unit of account.

The "crown will be $\frac{1}{248}$th part of a kilogramme of gold, and its value will therefore be about eleven shillings." The conclusions of the Convention are now annexed.

Monetary Convention between SWEDEN, NORWAY, and DENMARK, at Stockholm, December 18, 1872 :—

"Art. 1. The three Kingdoms of the North adopt gold as the basis of a common monetary system, silver and other inferior metals serving for the subsidiary coinage.

"Art. 2. The three Kingdoms shall have two common standard coins. One shall be coined so that 248 pieces shall contain a kilogram of fine gold, the other so that 124 pieces shall contain a kilogram of fine gold. The tenth part of the former coin, or the twentieth part of the latter shall be the unit of coinage, and shall be called a crown ('krona,' Danish, and Norwegian 'krone.') The crown shall be subdivided into 100 öre.

"Art. 3. The gold coinage shall be coined in the proportion of 90 parts of pure gold and 10 parts of copper. The gold coin of the value of 10 crowns shall in consequence weigh 4·4803 grammes, and that of 20 crowns, 8·9606 grammes.

"The diameter of the coin of 10 crowns shall be 18 millimetres, and that of the coin of 20 crowns, 23 millimetres.

"Art. 4. The subsidiary coinage shall comprise, (1), a silver coinage alloyed with copper in the proportions of weight determined below under Article 5, on the weight and fineness of the

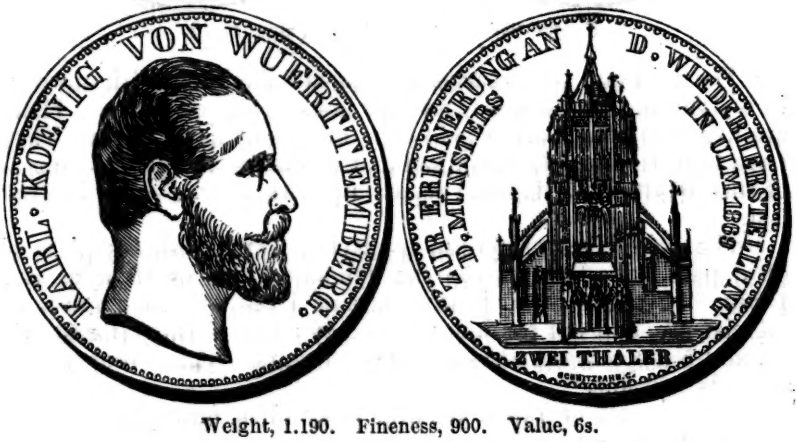
several pieces; (2), a bronze coinage, in the proportions of 95 parts of copper, 4 parts of tin, and 1 part of zinc.

"Art. 5. The coins mentioned below *may* be struck in silver, but *must* be struck in accordance with the diameter, weight, and fineness specified in the following table:—

	Diameter.	Gross Weight.	Fine Silver.
	Millimetres.	Grammes.	Grammes.
A piece of the value of 2 Crowns ..	31	15.00	12·000
,, ,, 1 Crown.. ..	25	7.50	6·000
,, ,, 50 öre	22	5.00	3·000
,, ,, 40 ,, ...	20	4.00	2·400
,, ,, 25 ,, ...	17	2.42	1.452
,, ,, 10 ,, ...	15	1.45	0·580

WURTEMBERG.—The *double thaler* of 1869 of silver is considered one of the finest specimens of modern coins.

WURTEMBERG. Double Thaler of Karl, Koenig. Silver, 1869.



Weight, 1.190. Fineness, 900. Value, 6s.

This kingdom and others having been lately absorbed into the Empire of GERMANY, their distinctive coinage has ceased. This piece is inserted for its rare beauty, and as a memento of the past condition of those States.

Of the smaller German States there were recently issued various specimens in silver and copper, viz., in Bavaria, Baden, and Hanover.

The new coins of JAPAN possess more interest than others to the numismatist, and to those who watch closely the social progrest of remote nations of the world.

The recent report of the Director of the United States' Mint contains the following remarks on the memorable change in Japan:—

"By one of those immense strides which have signalized this country of wonderful progress, a new mint and a new series of coin have been established, taking rank with the foremost. The

former Master of the Anglo-Chinese Mint at Hongkong has taken charge of the Mint of Japan. It is all the more honourable to the Government of that empire that it is ready to make use of aid from abroad so long as it may be needed.

JAPAN. Silver Coins. One Yen. 1872.

Weight, 866. Fineness, 900. Value, 4s. 2d.

"The gold and silver series are almost coincident with our own in weight and fineness, except the lower class of silver. There are five denominations of gold coin, and as many of silver. They have been thoroughly examined and tested by the proper officers of this Mint, and a detailed report upon them was made in May last.

"The gold piece of 20 *yen* is nearly parallel with our piece of 20 dollars. Under this are the denominations of 10, 5, 2, and 1 *yen*. In silver there is the piece of 1 *yen*, or dollar, for commercial use, and not for home currency; below this, the 50, 20, 10, and 5 *sen*, a word corresponding to cents. These four pieces are only 800 fine."

The new coins of Japan are nine in number, four gold and five silver. Their weight value is annexed :—

	Weight.	Fineness.	Value, United States' Currency.	Value, Sterling. £ s. d.
Silver, One Yen	.866	900	1.00.8	0 4 2
,, Fifty Sen	.402	800	0.44.6	0 1 10
,, Twenty Sen	.160.8	800	0.17.8	0 0 9
,, Ten Sen	.80.4	800	0.08.9	0 0 4½
,, Five Sen..	.40.2	800	0.04	0 0 2
Gold, Twenty Yen	1.072	900	19.94	4 0 0
,, Five Yen	.268	900	4.98.5	1 0 6
,, Two Yen	.107	900	1.99.4	0 8 4
,, One Yen	.53.5	900	0.99.5	0 4 2

The Sun and the Dragon are conspicuous emblems in these coins. The Sun represents Japan, the Dragon represents the

Imperial Power. The legends on all the coins are, "the Great Sun rising," and "Third Year of Peace and Enlightenment."

The emblems on these coins are of a similar character. The *two yen*, gold, is annexed.

Two Yen. Gold, 1872.

Weight, 107. Fineness, 900. Value, 8s. 4d.

The gold *yen* is too small for general use in any country. The fineness is 900 thousandths, instead of 800, which is the standard for their silver coins.

One Yen. Gold, 1872.

Weight, 53.5. Fineness, 900. Value, 4s. 2d.

The gold *five yen* is in value nearly 5 dollars of United States' currency, or about 20*s.* 6*d.* sterling. Annexed is a fac simile of the coin.

Five Yen. Gold, 1872.

Weight, 268. Fineness, 900. Value, $4.98½.

We learn from the latest Royal Mint Report, that "The First Annual Report of the Director of the Imperial Mint of JAPAN, at Osaka, for the year ending the 31st July, 1872, has been published by order of the Japanese Council of State, and contains full information as to the proceedings of the establishment up to that date. The demand both for gold and silver coin during the year had been larger than had been anticipated, and it had been determined to erect, with as little delay as possible, a Mint for

the coinage of copper, capable of producing 140,000,000 pieces annually.

"Large sulphuric acid works were also in course of erection under the directions of an English superintendent, and many other additions and improvements had been made or were in contemplation."

We have no reliable returns as to the production of gold and silver in JAPAN. The importance of the publication of official documents of this character seems not yet to be recognized by the Japanese authorities.

Of the product of the American mines we have reliable data. These show that the amount of domestic gold and silver deposited at the Mint of the UNITED STATES (PHILADELPHIA) and its branches was $836,203,463, in gold, $23,665,499, in silver, from the year 1793 to the 30th June, 1872. At the same time the coinage was $1,215,789,416, including both foreign and domestic metal product, a large portion of which may have been coined twice or more.

The coinage of the UNITED STATES is of comparatively recent dates, the first coin having been produced in the year 1793, by virtue of an Act of Congress passed April 2, 1792. The parent mint was established at the city of PHILADELPHIA—then and until the year 1801 the capital of the UNITED STATES—and has remained there to this day. Up to this year the coinage there has been about forty per cent. of the whole. The prolific yield of gold and silver in CALIFORNIA and other States of the Pacific slope led to the establishment of branch mints in the West; while the production of gold in the Southern States led, in 1838, to the establishment of three branch mints in the South, viz., one in NEW ORLEANS, another in GEORGIA, the third in NORTH CAROLINA. All of these were closed during the rebellion of 1861—1865; that at CHARLOTTE, in NORTH CAROLINA, having been re-opened in the year 1869. The branch mint at SAN FRANCISCO was established in the year 1854; at NEW YORK, in 1854; at DENVER (COLORADO), in 1863; at CARSON CITY (NEVADA), in 1870; at BOISE CITY (IDAHO), in 1872.

The management of the mint of the UNITED STATES has been recently transferred from PHILADELPHIA to WASHINGTON, the practical operations being carried on, as hitherto, at the former city.

Under the new regime of 1873 a new coin has been authorized, called the *trade dollar*, which it is supposed will be used largely in the export trade between the UNITED STATES and CHINA.

The new silver trade dollar was issued on 16th July, at the UNITED STATES Mint in PHILADELPHIA. Several hundred thousand will soon be manufactured and shipped to SAN FRANCISCO for distribution throughout the North-West and Pacific slope. The coin is not as large as the old silver dollar, but its composition is the same. The following is a description of the new piece:—Upon the obverse side is a female figure seated on a bale

of cotton and extending the right hand, grasping an olive branch, toward the open sea. In the left hand is a scroll bearing the word "Liberty," and at the base of the device appears the motto, "In God we Trust." The date of the coinage—"1873"—is upon the obverse, together with a halo of thirteen stars. The reverse

bears the figure of a spread eagle, with the inscription, "UNITED STATES OF AMERICA," and the motto, "E Pluribus Unum." The weight and fineness, with the words, "Trade Dollar," are also inscribed upon the reverse side.

CANADA. The year 1871 produced a re-coinage of the fifty cents of CANADA, with the head of VICTORIA. This coin is issued at a reduced weight, being worth in UNITED STATES currency only forty-seven cents.

CANADA. Fifty Cents.

Weight, .375. Fineness, 925. Value, nearly 2s.

"No change of design has taken place during the year 1872 either in the Imperial or Colonial coinages, and the only new design which has been submitted to the Queen for approval, has been one for a copper coinage for the STRAITS SETTLEMENTS. In this case, as in the case of the silver coinage for the same colony issued in 1871, the Colonial Government considered it necessary to suggest, without reference to artistic considerations, a design which would ensure the acceptance of the coinage by the native population.'

Of the more recent coinage for the British Colonies, the Annual Mint Report gives us the following details :—

"The only Colonial coinage executed by the Royal Mint during the year 1872, was a gold coinage of the value of 2,520*l.* 16*s.* 8*d.* in two dollar pieces, for the Government of NEWFOUNDLAND, issued in the month of March. Owing to the pressing demand for Imperial coin, it was impossible for the mint itself to undertake the numerous other coinages required by the colonies, and these therefore were entrusted to Messrs. RALPH HEATON and Sons, by the ENGLISH Agents of the respective Governments. They consisted of a copper coinage, of the nominal value of 22,173*l.* in one cent, half-cent, and quarter-cent pieces for the STRAITS SETTLEMENTS ; two silver coinages of the aggregate nominal value of 10,000*l.* for NEWFOUNDLAND, with two bronze coinages of the nominal value of 416*l.* for the same colony ; a coinage of subsidiary silver pieces of twenty, ten, and five cents, of the nominal value of 5,916*l.* for HONG KONG ; a further subsidiary silver coinage of the nominal value of 6,458*l.* for the STRAITS SETTLEMENTS ; and another large coinage of silver of the nominal value of 270,833*l.* for the dominion of CANADA.

"In the case of the copper coinage for the STRAITS SETTLEMENTS, which was a new coinage, it became necessary for the master of the mint to submit designs for each denomination of coin for the approval of the Queen. The dies prepared in accordance with these designs, bear on the obverse the effigy of HER MAJESTY, with the words "VICTORIA QUEEN," and on the reverse, the inscription STRAITS SETTLEMENTS, the date of the year and the denomination of the coin in letters round the margin, with the value of the coin in numerals (1, $\frac{1}{2}$, $\frac{1}{4}$,) in the centre of the piece, the numeral being adopted, in consequence of a recommendation from the Colonial Government, as essential to ensure the currency of the coinage, among the native inhabitants of the colony.

"The following table gives the amount of silver coin transmitted to, and withdrawn from circulation in Colonial possessions during the year 1872.

Silver Coin transmitted to Colonies.

St. Helena	£3,000
Victoria	12,000
West Indian Colonies	20,000
Bermuda	400
Tasmania	8,000
New South Wales	26,000
Cape of Good Hope	4,800
Gold Coast	2,000
Totals, year 1872	£76,200

"On the 14th January 1871, a Royal Proclamation was issued, giving currency to gold coins made at the Branch Mint at SYDNEY, NEW SOUTH WALES, of the like designs, as those approved for the corresponding coins of the currency of the UNITED KINGDOM, and in accordance therewith, the gold coins issued from this

branch of the Royal Mint are (with the exception of an identifying mint mark) identical with the gold coins issued from the parent establishment."

"MELBOURNE. The branch of the mint newly established at MELBOURNE, was opened for coinage in the month of May last, under regulations framed by the Governor of VICTORIA, with the advice of his executive council.

"NEW SOUTH WALES. During the past year gold mining in NEW SOUTH WALES received a sudden impulse from the discovery of the surpassing richness of quartz reefs, which had till then remained either unworked, or worked only to the extent of the feeble and desultory effects of individual miners. The glittering prospect of the prizes to be won, by assisting labour with capital and skill, attracted attention which even from the first was not without its reward. The gold received by escort, amounting in 1870 to 763,655*l.*, rose in 1871 to 1,143,781*l.*; and the rapidity with which the development of the wealth of the gold fields is progressing appears to warrant the sanguine expectation that NEW SOUTH WALES will, before long, take a foremost place in the rank of the gold producing countries of the world."

SMITH HOMANS.

COAL SUPPLY.

COAL is wood. Man burns, in fact, nothing but wood; the difference between forms of fuel being, that in the one shape the vegetable substance has been fossilized, in the other not. That which we call coal is fossil wood, which, during a long burial, has undergone certain chemical changes. Wood, in its raw state, consists of about equal parts of carbon and oxygen, with about one-fifteenth part of hydrogen; wood, when it has been cooked by nature and time into what we call "coal," has very much less oxygen, something less of hydrogen, and the carbon is left almost in its entirety. Vegetable matter, that is to say, wood, leaves, &c., when it decays on the surface of the earth, exposed to the air, becomes in the end black mould; the same matter, if allowed to decay under water, under sand, or under any substance which excludes contact from the oxygen of the air, becomes coal. The former of these two processes is going on over nearly all the land surface of the world; the latter in places, though it is much to be doubted if coal is forming in the globe to any extent adequate to make good its consumption.

Coal may be divided, first, into two classes, bituminous and non-bituminous. The non-bituminous, also called anthracite, is the oldest, geologically speaking, and the hardest; not less than nine-tenths of its substance is carbon. Accordingly it is of great value for use in furnaces, and gives out very great heat. This anthracite, also called "blind-coal," from its burning with-

out flame, is a kind of natural coke: where beds of coal have, in past ages, been burst through by volcano, the coal near the passage of the volcanic fire is anthracite, gradually changing with distance to the ordinary coal. Anthracite is in fact nearly identical with the manufactured substance known as coke.

The bituminous coals are those which are most commonly used in ordinary life. The development of black resinous or pitchy matter in coal as it burns, and its violent noisy combustion, attended with jets of white smoke, are well-known phenomena of the domestic hearth. But there are innumerable sub-varieties of coal, each with its own qualities, the balancing of which, in application to the numerous purposes for which coal is used, is a constant subject of study, not merely to the mining engineer, but not unfrequently to a Secretary of the Admiralty. There is "glance coal," so-called from the lustre of its shell-like flakes; "cherry coal," "soft coal," "splint coal," "parrot coal," and many other sorts; the last-named is virtually a stone, and may be worked, like marble, into statues and ornaments. In the form of jet, a lady often wears pieces of coal as ornaments in her ears or round her neck.

The uses of coal in our own day are so various, and so extensive, that it is difficult to imagine a state of society in which its use was unknown. It has been speculated, and that not without probability, that the withdrawal or exhaustion of coal from the earth at the present day would result in the ruin of England, the depopulation of the temperate zones of the globe, a modification of the entire physique of mankind, and perhaps the disappearance of the human species. And yet it is a fact that the ancients were unacquainted with its use as fuel, and that it only began to be used in England at the end of the thirteenth century. The Chinese, who have large coal beds, are believed to have discovered its use about the same time. These statements, however, rest upon uncertain evidence; what is known with certainty is that, in 1316, Parliament petitioned Edward II. against the employment of coal, which had then begun to be used in certain manufactures, the petitioners alleging that this strange fuel, then termed "sea-coal," because it came to London in ships, was detrimental to human health. The very slight foundation there is for such an allegation is now manifest enough. Smoke may be, in some slight degree, detrimental to health; but coal produces heat as well as smoke, and the facility it affords for the production and maintenance of warmth must far outweigh, in regard of salubrity, its disadvantages. Nevertheless, the Londoner who plucks a branch of a lime-tree in a square, and finds his hand black, or has to drive down to "the City" in November through a lurid bank of smoky fog, may be excused a moment of angry sympathy with the lieges who petitioned their king in the fourteenth century to suppress the burning of "sea-coal." A proclamation was indeed issued by the king against its use, but he might as well have issued an edict against the breathing of air or the drinking of water. Its use grew and its

supply increased ; in a few centuries it had become a subject for municipal regulation and taxation. To this day, coal is taxed upon entry into the city of London ; the toll was first levied as a means of rebuilding the City after the great fire, but the corporation have clung to it, and it now creates a fund for "civic improvements," though, as has been epigrammatically remarked, no civic improvement could be equal to a reduction in the price of coal.

To describe the uses of coal, or its principal uses, would be beyond the limits of anything short of a volume. It may be interesting to know, however, that not nearly half the coal burnt in England is consumed in the domestic grate. Out of 117,352,028 tons disposed of in the year 1871, manufactures and the generation of steam took no less than 85,371,796 tons ; while the private hearth burnt 16,639,046 tons. Ireland received from this island 2,593,197 tons ; and 12,747,989 were exported to foreign countries, partly for the use of our own navy and steamers on distant shores. The one great demand upon coal is for the manufacture of iron ; in this was used, in 1871, no less than 38,530,223 tons !

It is needless to say that the question of coal supply is one which comes home to us. It does literally come home to every living inhabitant of the country. There is consumed, one way or another, in England, more than four tons of coals a year per head of the population ; and, exclusive of the consumption for manufacture, there is used in London every year about 1 ton 9 cwt. of coals for every living being in the district for warming and cooking.

Any doubt then which may be raised as to the prospective sufficiency of the supply of coal is a matter which naturally creates anxiety in England. We have a climate here which, in the absence of fuel, would kill half the population in the course of a few winters ; coal is therefore literally, not by hyperbole, a necessary of existence. Seven years ago the possible failure or substantial diminution of the coal crop formed the subject of a Royal Commission, who investigated the matter as thoroughly as so necessarily speculative a matter could be investigated. The conclusion come to was not a very definite one. It might be expressed in the Scriptural text, "sufficient unto the day is the evil thereof." The Royal Commission came to the opinion that there was no cause for alarm at present ; but as regarded future generations there were so many elements of uncertainty in the factors of an estimate that no estimate could be given worth giving. Manifestly the use of coal is dependent upon the growth of population, the development of manufacture, the turn taken by various manufacturing processes, the advance of the science of lighting, and generally upon the course of human progress. No adequate materials exist for forming an opinion on the subject : one might as well undertake to prophecy the weather a century in advance. Enough is known, however, to justify the quieting of all immediate apprehension ; and as regards the distant future, if we busy ourselves at all about it, we may recollect

that scarcity of any commodity at once brings about its own partial cure in the demand it creates for substitutes. Should coal show signs of failing, no doubt some one would discover the means, for instance, of lighting cities with gas produced from other substances; while in the cases where coal could not be entirely dispensed with economical apparatus for applying it would spring up on all sides, and the evil prove, as, by the beneficence of nature many evils do prove, self-mitigating. In so far as concerns England, as against the rest of the world, we have the consideration that as time goes on, there will be probably less demand upon the British coal-field from abroad; enormous deposits of the mineral are known to exist in North America, in India, in China, and in Japan; further search will, without doubt, result in further discovery. As soon as coal becomes comparatively scarce, means will be found for the increased working of the known sources, and exploration for new deposits will be stimulated. In a broad sense, then, man need have no fear for his supply of fossilized wood at present.

That the world, taken as a whole, will not be put to any serious shifts for coal, has indeed been shown within the last few months. At the last meeting of the British Association, in the Geographical section, Baron Von Richthofen, one of the most extensive European travellers through China, who has spent many years in exploring the geological and other physical conditions of the country, contributed a paper, in which he stated that, guided by notice given by natives of the occurrence of coal in certain localities, he was enabled to visit nearly every coalfield of importance in this vast empire, and he found almost limitless abundance of the combustible mineral.

Owing, however, to the fact that this is the most recent series of strata taking part in the structure of the country, and to their being made up, in the main, of soft rocks, the coal measures have undergone a vast destruction by denudation, the degree in which it has occurred determining, in general, the wealth in coal of each separate section of the Empire. While, in the maritime provinces, the coal measures have been completely removed in many places, and imperfectly preserved in others, there are, further inland, provinces where the amount of denudation has just been sufficient to put the same strata under the most favourable circumstances, and render accessible marvellous measures of coal not outrivalled by those of any other regions of the globe. In other places, again, as in the inner basin of the province of Se-chuen, the coal measures have suffered so little destruction that the beds are buried in depths scarcely accessible to the miner. But the main fact seems plain, that the existence of a coal-field to the extent of about 100,000 square miles is demonstrated by outcroppings which occur along the whole line of its periphery. Though not yet able to compute from his materials the probable extent of coal-bearing ground in China, Baron Von Richthofen believes that Empire vies in this respect with the United States, and, being probably ahead even of them, may

prove to be of all countries of equal extent the richest in coal. Attention is chiefly directed to the province of Shansi, which contains at least 30,000 square miles of coal-bearing ground, the greater portion of which would give bituminous coal of superior quality, while the rest constitutes the largest known anthracite coalfield. In many places the price of the finest anthracite in large lumps is 7*d.* per ton at the pit's mouth, while bituminous coal is even lower, the miners' work consisting in little more than quarrying, and the seams attaining the thickness of 30 feet. Among the consequences which may result from these discoveries, the most important appear to be the eminent capability of China for manufacturing purposes, an immense amount of very cheap and skilled labour being available; the circumstance that the country is adapted to the establishment of an extensive net of railroads, the construction of which will be promoted by the density of population, the great amount of inland traffic, and the physical features of portions of the Empire; and, finally, the future connexion, by rail, of China with Europe, for which one line only is perfectly feasible—leading through the province of Kansu, the oasis of Hami, and the region of Fli, on the confines of Russia—a line which is favoured throughout its extent by the occurrence of coal. What, therefore, is more likely to occur than an absolute dearth of coal in the world, is a transfer, by the influence of coal, of thec entres of civilization. In our own day, it is true, there seems little fear of the Birmingham hardware industry, and Sheffield cutlery facture being carried on in the centre of China, but it is easy to see that some such revolution may be "only a question of time." Collectively, however, the human race may be re-assured by recent investigations.

From the experience of the last year or two it is evident, in fact, that it needs only the stimulant of scarcity to sharpen the edge of investigation for the all-important mineral. According to recent advices from Panama, extensive coalfields have been found in the middle of the Isthmus, between Panama and Aspinwall, and in communication with the Atlantic by the Rio Indio, a fact which, it is interesting as well as hopeful to note, is in contradiction of the theories of Humboldt and other geologists, that coal does not exist in volcanic regions. Coal is found on both sides of the Isthmus watershed. A hill entirely composed of coal has been found not many hours' sail from Panama, on the Pacific coast, and the specimens brought home to England and tested show it to be of a very promising quality. Even in England it is likely that there is still much coal to be discovered, and much more of our fair island may be destined to bear the title of "the black country." It was the conclusion of the Royal Commissioners on our "coal supply" that the probable quantity of coal in our ascertained fields amounted to ninety thousand millions of tons, and that if we went deeper, under the Permian, new red sandstone, and the other superincumbent *strata*, still at workable depths, we should get fifty thousand millions of tons more. Even making allowance for increasing consumption by an

increasing population, there was coal enough, they thought, to last 360 years, while, if the consumption should not increase, the supply would last four times as long. But all this, as we have already intimated, is to a very great extent hypothetical, and in any case does not reassure us against a prohibitory scale of prices. The utmost we can be sure about, when all has been said, seems to be that, taking the world collectively, there is fuel enough stored in its crust for an indefinite time to come.

But unluckily our feelings are not collective, but individual. The man or woman who sits shivering and cheerless in a room in mid-winter without a fire, will derive no comfort from reflecting that mankind in the aggregate has enough coal. Nor is it much of an answer to the apprehensions of the English householder that there is coal in India, China, or Australia, waiting to be worked. If coal runs up to shivering prices in London, we shall not get warm by thinking on the millions of tons which lie under the surface in New Zealand. Accordingly the knowledge that the human race, as a body, had enough coal for its wants stored in the earth did not prevent a panic respecting coal occurring last winter in the little island called England, and amongst that small but important section of humanity called the English. For some reason or other, or for many reasons not easily definable, the average price of good domestic coal in London, which had been for years past less than 19*s.* a ton, ran up to an average (during 5 months) of 32*s.* 6*d.*, the price for two days being, on the Coal Exchange, no less than 45*s.*

Such a state of things could hardly escape the attention of Parliament; and at the beginning of the last session a committee was appointed "to inquire into the causes of the present dearness and scarcity of coal." The word "scarcity" might perhaps have been omitted: there was no scarcity of the combustible stone, except a relative one. Nor was the question of prospective supply raised before this committee; this had, as already intimated, been dealt with and satisfactorily reported upon by the Royal Commission appointed in 1866, which made its report in 1869.

The public mind had been worked up to a considerable state of interest, almost excitement, on the subject of coal, in the winter just passed. It was the daily topic in the townward omnibus or train, and the theme of anxious domestic deliberation at home. Men lost their heads about coal, and rushed off to the sellers to give large orders at high prices lest prices should be higher. Consumers raised the market against themselves, everybody, in stock exchange phrase, "speculating for a rise," and by speculating for it causing it. Coal came to the front in the daily newspaper, and bulletins of the market prices appeared in the leading columns; postmen got wages raised on the strength of it, and clerks founded upon it memorials for the increase of their salaries. Other commodities began to sympathize with coal; everything for the production of which fire is requisite—and this includes three-fourths of the necessaries of modern society—felt

the rise, and began to rise also. The all-pervading influence of the "black diamond" came home to every one, and affected everything. There is no reasonable doubt that to some extent the coal panic fed itself, and that the consumers were themselves in some degree the cause of the rise in prices.

Meanwhile a number of reasons were alleged for it. Some of the public became angry with the owners of collieries on the supposition that they had tacitly conspired to restrict production, and thus enhance prices; others cursed the "middleman," alleging that the enormously increased prices went to fill the pockets of the "coal merchants;" more philosophical observers pointed to the strikes and combinations of the working miner as the source of the evil. Some said there had been a vastly decreased "out-put;" others that there had been a vastly increased demand.

The truth appears to be that more than one of these causes were at the root of the phenomenon of the winter 1872–3. There has been, in the first place, a certain diminution in the hours of labour in mines as the result of the Mines Regulation Act; this measure was passed in 1872, and its effect consequently first felt in 1872–3. But beyond this, the minds of the mining population had become possessed with a desire to act for themselves in regard to the amount of work they should do, and by organizations among themselves they had succeeded, in almost all the coal raising districts, in shortening the time of work.

No doubt this movement for a shortening of the hours of labour is a feverish one, induced by the agitation which preceded and brought about the Mines Regulation Act. Men have a right to make what contract they can for the sale of their labour, and are not to be blamed if they do as little work underground or above ground as may be necessary for subsistence in comfort. But amongst an ignorant class of the population, such as those who work coal, it is not to be wondered at that the desire to live easy lives has led to grotesque and extravagant temporary results. This will right itself in time; the fever will abate, and miners will work as long as they used to—as long, that is to say, as on the whole, bodily strength will admit of their working as a regular thing. Still the diminution in the quantity of coal put out in 1872 was perceptible. A calculation based upon the number of men employed and the quantity of coal raised, shows that while in 1864 each workman brought to the surface 309 tons on the average, in 1867 and 1869, 316 tons; in 1870, 321 tons; the out-put per man fell in 1872 to 299 tons. These figures are based on returns made from all the English collieries to the Inspectors of Mines, and are, no doubt, substantially correct. The English working miner did, therefore, to a certain extent, restrict the production of coal for his own class ends, and thereby contribute to, and lay a real foundation for, the increase of price so acutely felt in London. It is not likely, however, as already remarked, that this cause will be permanently in operation, at any rate in the same degree. The desire to earn wages must tell in the long

run. Meanwhile the owners of collieries are endeavouring to increase the out-put by adopting more generally what is called the "double shift" system, the employment, that is to say, of two sets of men in the twenty-four hours of the day.

That the men employed in the coal industry are the worthless and greedy creatures which some have made them out to be, does not appear from investigation. It is credibly stated that a "pikeman" in a coal mine works harder than any other man in the world; and that he could not work more than five days a week without soon killing himself. His labour has to be performed in all kinds of contorted positions, while his hands and arms are going with the regular stroke of machinery; he does his work by fits of six or eight hours, and then has to take long rest; such a man goes on sometimes till, on arrival above ground again, he can scarcely stand. Nor, in the opinion of those who live among them, are they a brutalized set of drunkards. "I think," said a witness before the late Parliamentary Committee, "that there are classes above the collier—those young men, for instance, who go to 'do their bitter' in the morning, and then drink in the course of the day, who take ten times as much as the collier; only on Saturday night he makes a row; he has had none all the week, and then gets very tipsy." And as to the arduous nature of the work, hear another witness: "I mean to say," remarks Mr. W. Brown, agent for miners in North Staffordshire, "that as far as I know about working, coal cutting is the hardest work that I know: I have shorn corn with a sickle for my living in harvest time for years in succession, when there has been short trade; I have mowed grass and corn with a scythe; I have worked in a forge; I have broken stones on the high road; I have done everything I could do for an honest living; but cutting coal is the hardest work I ever did."

Nor is hard work the only hard feature in a miner's fate. We are all familiar with the wholesale accidents which every now and then result in a hecatomb of lives sacrificed to coal-getting; these startle and shock us; but there is more than this incidental to underground labour. By "black damp," the fruitful cause of "miners' asthma," it is believed more lives are lost than by explosions. But the murder is gradual, instead of sudden; men drop off one by one, and make no paragraphs in the morning papers; so the ravages of "miners' asthma" are unknown to all but those who live among miners; uncared for consequently, and unremedied. If a pit is "fiery," the owner gets it ventilated, lest some day a dozen men may be killed at a blow, and trouble may come to the proprietors: but in a mine infested only by the insidious and poisonous "black damp" ventilation is neglected, and men die slowly, but as surely as by fire-damp, though without causing a sensation or an inquest. A man who has worked in "black damp" will go home in the afternoon, lie down as he is without having strength to wash or eat, and go instantly so fast asleep that he cannot be aroused for fourteen or sixteen hours. After a time he develops asthma, and then it is

only a question of time for death to come; he may live seven or even ten years, but he cannot work, and the grave gets him prematurely in the end.

Something of our difficulty in regard to coal is doubtless due to wastefulness in its use. Much more coal is burnt, in houses at least, than is requisite. In manufacture less is wasted, for the price of coal is an important element in the cost of manufacture, and competition ensures economy in processes. Waste in the private stove will, without doubt, be lessened by high prices, though it is too much to hope for that the domestic servant of the period, who does not pay for the coals she burns, will ever be other than extravagant in fuel. Various devices for economizing coal have already appeared and been discussed: in this respect also the evil of high prices must prove self-mitigating.

The foregoing causes, however, are but small, as compared with another, which carries with it its own element of compensating reason for congratulation. According to the great weight of evidence given before the Committee of last session, the increase in the price of coal is chiefly attributable to the large increase in the demand for, and the price of British iron. Coal is very largely used for melting iron, and for converting "pigs" of iron into rolled iron. In 1867 there were used in iron-making in England 28,331,977 tons of coal, and this rose in 1871 to 38,540,102 tons. In 1872 the increase was nearly maintained, the quantity of coal used having been 38,228,875. By itself this is not sufficient to account for the large advance in the price of coal; but it is the one substantial reason, and as it involves the increasing prosperity of a great English industry, it is a reason in which we ought to find some comfort. Other industrial changes contributed to the result. There is a yearly increase in the substitution of steam for sailing vessels, and a yearly increase in the extent of nearly all the English industries which involve the consumption of coal. The manufacture of alkali in the north of England is to a considerable extent answerable for the increased demand for mineral fuel. From September, 1871, to July, 1872, forge pig iron rose in price from 50*s.* to 110*s.*, and the same increased demand which raised the price of the metal raised the price of the principal material used in its manufacture, namely coke. This form of coal rose, in direct connection with the iron trade, from 10*s.* in September 1871 to 40*s.* in 1872. The action of this upon the price of coal in general may be easily imagined.

Most of the sinister reasons given, then, for the disagreeable phenomenon in regard to coal last winter, may be dismissed as of no real weight, the great, if not the sole, reason having been the increased demand from America and Germany for British iron. The owners of collieries are, at any rate, distinctly acquitted by the Committee of last session of attempting to restrict the supply; on the contrary, they made every effort to meet the increased demand. They sent small coal to market which had been previously treated as of no value, and they exhausted stocks lying at the banks of their pit mouths.

Not so distinctly free from blame are the workmen, or rather certain agitators amongst the workmen. It is in evidence that efforts have been made to induce workmen to put pressure on the owners of coal-pits to restrict the out-put of coal, under the impression that a high rate of wages might thus be maintained as a result of the increased prices; efforts appear to have been suggested for preventing large stocks of coals being kept at bank, on the ground that this rendered owners independent of a temporary cessation in the out-put. But the body of workmen appear to have appreciated the truth that any attempt of the kind must work in the long run against them, and to have been alive to the fact that the deterioration of coal from exposure will always prevent any inordinate reserve being accumulated.

On the whole, then, it seems to result from investigation that the phenomena witnessed last winter in the coal markets do not call for legislative interference, or, indeed, for any very serious lamentation. In the principal cause operating, the exceptional prosperity of trades in England using coals, we have reason for rejoicing; the minor causes bid fair to be but temporary. That coals will ever be as low in price as formerly is scarcely to be expected; but in the end other circumstances will adjust themselves to this, as they do to other conditions of life. It has been suggested, indeed, that an export duty on coal would be excusable, not to say advisable. But a very slight investigation of the plausible proposal divests it of its attractions. Coal is not exported from England entirely, perhaps not chiefly, for foreigners. It is shipped out for use in steam-ships; and a tax upon its export would be a tax upon British shipping and upon the export of all British manufactures carried in ships to foreign markets. It would be felt, moreover, in an enhanced price of all raw material imported into the country for the manipulation of English manufacturers.

It must not be omitted that the Coal Committee of last year express an opinion that the prices of coal which prevailed for several years before the recent rise were too low to afford a reasonable profit to owners, or an adequate scale of wages to the men employed in an arduous and hazardous branch of industry. And the entire question of cause and effect is clearly brought out by one chronological fact; that the actual order of events was a rise in the price of iron, a rise in the price of coal, and, lastly, a rise in the rate of wages. A cause must precede its effect, and the rise in wages followed the rise in price of the commodity.

The general conclusion of the recent Committee is, that no Parliamentary interference is desirable. They believe that the true policy of the country and the best inducement to the proper conduct of business, as well as the greatest stimulus to a return to a more just balance between supply and demand, is to leave the trade free, and to maintain an inflexible resolution of non-interference on the part of the State. To adopt the opposite course would, indeed, be to make one class pay for the benefit of another; whilst any restraint on the profits of private business

or industry by the power of the law must, in justice, carry with it the guarantee of the resources of the State against loss, which is out of the question.

Meanwhile the uneasiness which the present price of coal has created shows itself daily, and sometimes in strange ways. Indignation meetings are held here and there by persons, it is to be presumed, who think that to express a grievance is necessarily a step towards its remedy. In the present case the contrary effect is probably produced; the more loudly indignation is expressed, the more consumers become alarmed at their prospects, the more they rush to buy, and the higher ascends the scale of prices. Indignation moreover is as much misplaced in the matter as it is in the corresponding matter of the rise in the price of meat. Society exists in England upon market principles: great demand, or its complement, short supply, necessarily causes prices to rise; and even if short supply be the result of an understanding amongst workmen not to work more than so many hours a day, it must be remembered that the workman, like every one else, has a right to get what price he can for his labour, and sell it on the best terms he can. More to the point is the increased vigilance shown in towns against the frauds and quasi-frauds of sellers of coal. The familiar mineral has long been the subject of some of the standing tricks of dishonesty in London. Who has not been accosted, at sunset, by an apparently bewildered driver of a coal-waggon, with a story that he has in his cart a quantity of best coals ordered for "Captain This," or "Major That," whose house he cannot find; and an offer to sell the said best coals at a reduction sooner than cart them back again? And when the householder who has been foolish enough to strike one of these street bargains comes to put his acquisition to use, he finds that he might as well have ordered a few tons of slate débris, with the additional mortification that, even of the unburnable material purchased, he has got little more than two-thirds of the nominal weight.

More sensible by far than crying out against coal-owners and coal-getters is the movement which has recently been made for promoting economy in consumption. There is undoubtedly much room for reform in this particular. Not only do we warm ourselves to excess, and thereby weaken our natural powers of endurance, but we waste warmth by the primitive and extravagant forms of our hearth apparatus. It has been calculated recently by Dr. Siemens that out of the about 105,000,000 tons of coal burnt in the private grates of England during 1872, no less than 50,000,000 tons might have been saved by proper care and proper apparatus.

Such is the most tangible and intelligible source of comfort in our present perplexity. There is another suggested consolation, not so easily realised; it is, as stated by Dr. Siemens, that "when our present stores are exhausted we may perhaps utilise the direct heat of the sun."

JOHN CROWDY.

THE CENSUS OF ENGLAND AND WALES.

THE statement that the cost of the printing and binding of the Blue books and other official documents for the two Houses of Parliament during the financial year, 1873-74, required a vote of nearly a hundred thousand pounds, will give some idea of the enormous mass of matter which is annually collected in what the majority, even of the reading public, regard as ponderous and uninviting tomes, and if to this were added the amount of money annually expended in the production of these works in the various Government departments, it may be fairly asserted that the result would startle even the most thoughtless of financiers, and would perhaps lead to the introduction of a little wholesome economy. But as matters stand there is little prospect of any reform. As long as it is the privilege of any member to call for returns and reports, the preparation and publication of which involve an enormous outlay of labour and capital often out of all due proportion to any benefit likely to result from them, so long will the nation be saddled with an outlay which, in a considerable number of cases, might be profitably reduced, and in a still larger number dispensed with altogether. For out of the long list of papers issued quarterly by Messrs. Hansard, there are, it must be admitted, very many which are of no possible interest for the public, and of which the provision of a few transcripts, by means of a copying press, would have served every purpose. While, however, this is true in many cases, there are other and numerous instances where the national money is well laid out on the so-called "Blue books," and where documents of real value are produced. In the case of the statistics collected by the Board of Trade, the Commissioners of Customs, and the Revenue Officers for example, we have a host of figures marshalled before us, which are of the utmost value to the student of political economy, and indeed to all true Englishmen who are as interested in the national balance-sheet and in the record of the commercial success of the country as in the profit and loss accounts of their own business. In the reports of the Education Department, again there is a constant exhibition of the progress of the various schemes for the improvement of the people by means of state-aided primary schools which, in an age like our own, when it is more nearly true than at any previous period in the world's history that "knowledge is power," possess a direct interest for the taxpayer as well as for the philanthropist. Or, if we turn to the vast field covered by the operations of our Poor Laws, or our Criminal Laws, there again we are met by reports of vital importance which no statesman can afford to neglect; while in the kindred matter of the public health whether as regards the Army, the Navy, or the Civil populations, in the returns of the Medical Departments of the two services and of the Registrar-General of Births, Deaths, and Marriages, we have ready to hand a sound basis for sanitary reform, a reliable guide to the

adoption of a series of wise preventive measures which, as experience proves, may be made the means of saving many valuable lives and of avoiding much pain and misery. But while the useful, as distinguished from the useless Blue books are thus numerous and varied, there are some among their number which possess a special interest for the nation at large in their results, if not in their actual details, and of these the Population Tables, made up from the decennial Census returns, are perhaps the most valuable. And yet, strange to say, they are practically the least known, and, we may almost add, the least popular. Although each man, woman, and child, has an individual interest in the marvellous tables which are here presented with uniform accuracy, inasmuch as he or she is represented by one of the units in the momentous totals, and although collectively every lover of his country ought to take some note of the growth of the nation to which he belongs, it is a singular fact that the circulation of the Census Returns is limited to about a thousand copies over and above the supply made to the Members of the Houses of Parliament and to the various offices, and it is questionable whether even these copies are bought or studied. We use the word studied advisedly, for the Census Reports must be studied and not read. The facts to be deduced from them are not to be gained from a mere cursory glance, but from a series of comparisons which though useful and interesting, are little likely to engage a casual reader. It is then with a view of placing before a larger circle than will be reached by the official returns some outline of the information which they convey, that we propose in this paper to follow up the article on the Preliminary Census Report published in the Companion to the Almanac for 1872, and to notice in detail the two large folio volumes which even now, with their 1190 pages and their millions of figures, only form a part of the entire work, the abstracts of the population by sex, ages, conjugal condition, occupations and birth places, and the abstracts of the ages of lunatics and idiots, of the deaf and dumb, of the blind, of the sick in hospitals, of the paupers in workhouses, of prisoners, of the returns of merchant seamen, and of the army and navy abroad, and of the census of the colonies and of India, being still unpublished at the time of our going to press. In these last volumes as in the report on the general results of the whole Census there will, of course, be much general information of a highly interesting nature, but in the meantime there is ample matter for consideration in the volumes before us.

And first it will be well to state briefly what is the nature of the

Contents of the Population Tables.

In the first volume we have after the preface, or, to describe it in official language, the covering letter to the Home Secretary, a series of summaries of the figures subsequently given, showing, as regards England and Wales, the population and houses in the ecclesiastical as well as the civil divisions, the number of persons in the various institutions, on board ships, in barges and barns

and other places on the night on which the census was taken, together with tables of the population of the islands in the British seas, and of the number of emigrants from 1861 to 1870. To these summary tables, as they are termed, succeed the tables for the counties arranged under various classes, showing the area, houses, and population of each county in 1871 ; the houses and population at each census from 1801 to 1871 ; the area, houses, and population of the Parliamentary divisions and boroughs, of the hundreds of the petty-sessional divisions, of the Lieutenancy sub-divisions ; the houses and population of the municipal and Parliamentary boroughs ; the area, houses, and population of the municipal boroughs in 1861 as compared with 1871, and of the Local Board districts and towns not being boroughs in 1871 ; the inhabited houses, families, or separate occupiers, and population of the civil parishes or townships, *i.e.*, of places in which a poor-rate is separately levied ; and lastly the area, houses, and population of ecclesiastical districts or new parishes, and of those parts of ancient parishes which though sub-divided for ecclesiastical purposes, are still attached to the mother churches. In other words, in the eleven tables placed under each county, we have the results of the numbering of the people and of the houses arranged under all the heads on which information could possibly be required, so that for ordinary, political, legal, municipal, poor law, local government, militia, or ecclesiastical purposes, the figures are tabulated in the most convenient way, and are perfectly adapted for immediate reference. These tables fill the first volume. The second volume is arranged according to the sub-division of the country for census, registration, and poor law purposes into unions and registration districts answering to the divisions adopted by the Registrar-General in his returns of births, deaths, and marriages, and differing in many cases from the ancient boundaries of counties and hundreds, although in aggregate area and population they closely approximate. Under each of the eleven divisions into which the counties are thus grouped for statistical purposes we have separate tables showing the area, houses, and inhabitants, in the registration or union counties, in the Superintendent Registrar's districts, in the Registrar's sub-districts, in the parishes and places comprised in each Superintendent Registrar's district ; the number of persons in public institutions within the various districts ; the number of persons on board vessels ; the acreage of land and water in the parishes and places ; the aggregate of the areas of land, water, and foreshores ; with returns of marriages, births and deaths, from 1861–70, of the excess of births over deaths, and of the increase or decrease of population between 1861 and 1871 in each of the Superintendent Registrar's districts. In addition to the above, there are eleven tables specially referring to the Metropolis which curiously illustrate the various meanings attached to the term "London" by different classes of persons. Thus we have the London of the Metropolitan Board of Works coinciding with the London School Board District ; of the City proper ; of the Metropolis Local Manage-

ment Act (for the election of vestrymen); of the Metropolitan and City Police districts; of the Central Criminal Court district, and of the Tables of Mortality. To use the words of the Census compilers "the London within the tables of mortality, differs from the London within the limits of the Local Management Act; and both differ from the London of the Central Criminal Court, which also differs by defect from the London of the Metropolitan Police, while the London of the Metropolitan Parliamentary boroughs is unique. Then the subordinate divisions of these several Londons seldom agree. Besides these Londons, there is the diocese of London; and other Londons have been constituted by the Post Office and by other departments, each having its own preconceptions and administrative views without any reference to the order and the harmony of the whole." Such a statement as this is well calculated to illustrate, not only the difficulty of preparing the Census tables, but also the voluminous character of their contents, the figures having no sooner been satifactorily disposed under one head, than it becomes necessary to redistribute them under another. Such then is a brief conspectus of the contents of the Reports.

Before proceeding to notice the figures contained in the work, we will give some account of

The Divisions of the Country.

The anomalies of the present system under which, as just forcibly instanced in the case of London, the country is split up into districts varying without any practical advantage, and in some cases with palpable disadvantage, are clearly brought out by these Reports. In the old Censuses up to 1841 inclusive, the historical sub-divisions into hundreds which have existed since the days of King Alfred were adhered to, but now, as it is well remarked, "it is a peculiarity of the administration of this country that nearly every public authority divides it differently and with little or no reference to other divisions. Each authority appears to be unacquainted with the existence, or at least with the work of the others." The truth of this statement in regard to London has already been shown, but the preface continues, "similar anomalies exist as regards other districts and other great cities, so that the Parliamentary borough, the municipal borough, and the union of the same name, are often not conterminate. Besides the civil parish, a group of such parishes is evidently required to form an administrative unit of larger dimensions; and accordingly we have had formed hundreds, boroughs, Lieutenancy sub-divisions, petty-sessional divisions, police divisions, poor law unions; agreeing in average size and population, but differing incongruously in their constituent parts." The Census, it will be remembered, was taken in 626 registration districts, generally identical with poor law unions, but with the aid of the officers of the other divisions the returns have also been made available for those divisions. The greatest difficulty in this respect was experienced in regard to the ecclesiastical divisions, owing to the

creation of new districts either attached to or separated as new parishes from the original parishes. No complete list having been published of these sub-divisions, and some doubt existing as to their boundaries, the compilation of the returns in this portion of the work was surrounded with difficulty, and therefore it must, its authors state, only be taken as an approximation. The country is ecclesiastically divided into 2 provinces, 28 dioceses (including Sodor and Man); 71 archdeaconries, 728 rural deaneries, and about 13,000 separate cures. In its civil divisions we have 11 groups of registration counties in topographical regions; 52 counties; 95 Parliamentary counties or Parliamentary divisions of counties, reckoning each undivided county as one; 626 registration districts conterminous with unions or groups of unions; 647 unions; 621 Lieutenancy sub-divisions for militia purposes; 893 petty-sessional divisions and boroughs; 1,042 hundreds and similar divisions including 224 municipal boroughs; 2,195 Registrar's sub-districts, groups of which constitute the registration districts; 15,416 parishes, townships and places; while for Census purposes there was a still more minute sub-division of the country into 31,916 enumeration districts, besides 627 large public institutions separately enumerated, making in the aggregate 32,543. The motto which might justly be inscribed above this very miscellaneous list is "confusion," for such it really amounts to, and we are by no means surprised to find the authorities at the Census Office remarking that, with one simple connected series of sub-divisions of the country, their labours would be very much simplified, while it is equally true that "the difficulties of local administration are probably increased in a still greater degree from the same causes, for the success of civil as well as military operations, depends very much upon the way numbers are grouped and ground is taken up." Whether any Government during the present generation will be bold enough to act on the hint here thrown out, and reduce the existing chaos to something like order, is more than we can venture to predict, but it is not one of the least of the advantages arising from the publication of the Census that it has shown the evil in its true light, while at the same time it is only just to add that the difficulties caused by it have been met and overcome in the most creditable and satisfactory manner.

Turning to the tables, we will at the outset deal with the general results, and then proceed to notice the details under various heads. And first as to

The Growth of the Population.

This is in many respects so marvellous, that it would be well nigh incredible if it were not substantiated in the most plain and incontrovertible manner. In order to realize to the full extent how mightily the people of England and Wales have "increased and multiplied," we must not be content simply to contrast the present with the past fifty years—that being the limit attainable by means of the Census returns. We must go back to a still earlier period, and thanks to the energy of Mr. Rickman who

superintended the preparation of the Census returns from 1801 when they were first drawn up, down to 1831, we are furnished with data which are sufficiently trustworthy for all practical purposes, carrying us as far back as the year 1570, or about three centuries ago. Aided by the clergy throughout the country, and acting on the advice of Mr. Finlaison the actuary of the National Life Annuity Office, Mr. Rickman prepared a series of tables based on the average of three years' entries of births, marriages, and deaths, in the parish registers at the following periods, 1570, 1600, 1630, 1670, 1700, 1750. Assuming the proportion of births, deaths, and marriages, to the population to be the same as at the taking of the first Census, a series of figures were arrived at, which were printed in a table in the Companion to the Almanac for 1844, page 23. From these tables we have compiled the following, adding the population at later periods from other sources, and then bringing the figures down to our own day from the Census returns.

Year.	England and Wales.	Year.	England and Wales.
1570 ..	4,038,879	1790 ..	8,675,000
1600 ..	4,811,718	1801 ..	8,892,536
1630 ..	5,600,517	1811 ..	10,164,256
1670 ..	5,773,646	1821 ..	12,000,236
1700 ..	6,045,008	1831 ..	13,896,797
1750	6,517,035	1841 ..	15,914,148
1760 ..	6,736,000	1851 ..	17,927,609
1770 ..	7,428,000	1861 ..	20,066,224
1780 ..	7,953,000	1871 ..	22,712,266

Accepting the earlier figures merely as an approximation, although there can be little doubt that for statistical purposes they are reliable, we are met by the astounding fact that the population of England and Wales rose from about four millions in 1570 to five millions and three-quarters in 1670, an increase of a million and three-quarters in the century; that it again rose to nearly seven millions and a half in 1770, being an increase of about the same proportion in the one hundred or of three millions and a half in the two hundred years; and lastly that in 1871 the population stood at nearly twenty-three millions being an increase in the last century (1770–1871) of about fourteen millions or in the three centuries (1570–1871) of nearly nineteen millions. The increase thus shown in the last century is rendered the more remarkable when it is remembered that it amounts to at least seven times the amount of increase in the previous hundred years.

The most striking result to be obtained from this table is, that in the last seventy years, the population has more than doubled itself. In order however to estimate the more recent growth of the population, it will be well to show the actual increase during the decennial periods since the first Census was taken, and the decennial rate of increase per cent. of the population.

Period.	Increase of Population.	Decennial rate of increase per cent.
1801—11 ..	1,271,720	14·30
1811—21 ..	1,835,980	18·06
1821—31 ..	1,896,561	15·80
1831—41 ..	2,017,351	14·52
1841—51 ..	2,013,461	12·65
1851—61 ..	2,138,615	11·93
1861—71 ..	2,646,042	13·19
In seventy years	13,819,730	Total increase per cent. .. 155·41 Annual ditto 1·35

In the periods 1831–1841 the military are not included, and in 1841–1851 the seamen and others on board ship are excluded, thus accounting for the apparent decrease in the proportion. Looking at the population under its sexual divisions, we find that the actual number of women in England exceeds the number of men by about one-sixteenth, probably owing to the fact that the number of male emigrants is considerably in excess of the females. The actual preponderance of women over men at the taking of the last census was 594,398, but if the men living abroad or serving in the Army and Navy on foreign stations were taken into account, the proportions would become far more smaller, for although the number of boys born is larger than the number of girls the boys die to a greater extent, and thus the balance would be maintained with tolerable equality, if it were not for the continued withdrawal of male emigrants.

Turning from the growth of the population to the

Statistics of Inhabited Houses,

we find some equally interesting tables in the reports. Regarding every distinct building as a single house irrespective of the number of separate tenements into which it may be parcelled out, we find that in 1871 the inhabited houses in England and Wales amounted to 4,259,117, giving a proportion of 5·3 persons to each house. The proportion of persons to an inhabited house in Scotland was far larger, amounting to 8·2, but in Ireland only slightly higher, 5·6, the average for the United Kingdom being 5·6. In looking at this average, however, the fact just stated must be borne in mind, as the term "house" in the sense in which it was employed by the census enumerators included, like the Horatian line, the palace of the rich and the cottage of the poor, the one with its numerous circle and its string of servants, the other with perhaps its solitary inmate. The increase in the number of inhabited houses in England and Wales between 1861 and 1871 amounted to 519,612. The number of houses inhabited in 1801 was 1,575,923, and thus the increase in the seventy years has amounted to 2,683,194. There is a proportionate increase also in the number of uninhabited houses which stood at 57,476 in 1801 and 261,345 in 1871, showing a net rise of 203,869. The number of houses in

process of building was not returned at the first Census, but it was given in 1811 when it stood at 16,207. In 1871 it had more than doubled, having risen to 37,803. Taking the total house accommodation, inhabited, uninhabited, or building, we are enabled to arrive at some statistics which show that over-crowding is decreasing, a result which philanthropists generally will hail with sincere satisfaction. Accepting the figures furnished by Mr. James Lewis in his useful "Digest of the Census," we find that the proportion of house accommodation to the population stood as follows at the undermentioned dates :

1811	..	5·45 persons to each house.		
1831	..	5·29	,,	,,
1851	..	5·18	,,	,,
1861	..	5·08	,,	,,
1871	..	4·98	,,	,,

The average number of persons who, if every one slept in a house which is very far from being the case, would be apportioned to each domicile now stands at five as distinguished from five and three-quarters sixty years ago, a very satisfactory indication of progress in a direction in which reform is still needed. But further than this, we are enabled to arrive at the number of families or separate occupiers, every tenant or lodger with persons living or boarding with him, forming a family in the enumerators' sense of the term. The numbers of families thus estimated stood at 5,049,016 at the last Census as compared with 4,491,524 in 1861, showing an increase equal to 557,492, in the ten years while the proportion of persons to a family was 4·50 in 1871 and 4·47 in 1861, or excluding the inmates of institutions and persons on board ships, together with the homeless and houseless who slept in barns and elsewhere, the proportion would stand at 4·41 in 1871 and 4·38 in 1861.

Our next inquiry carries us to the

Census of Public Institutions,

A point on which the information given in the tables under the various registration sub-districts is unusually complete and interesting. The Census, regarded from this special point of view, is in fact an index to the progress of philanthropic effort in our midst, far more reliable in its way than the balance-sheets and reports of our benevolent societies. In order to facilitate further investigation in this field, the particulars relative to the public institutions are given in a separate table under each division of the registration districts. In this table we have the full title of the institutions, the total number of persons, males and females, sleeping within them on the Census night, and then in separate columns the number of special inmates, such as paupers in the case of workhouses, lunatics in the case of asylums for the insane, and patients in the case of hospitals, thus rendering it possible by a simple subtraction sum to arrive at the number of officials as distinguished from the number benefited in each case. Schools for the blind, for the deaf and dumb, and for orphans are included in this table ; but other educational insti-

tutions, such as colleges, training colleges, and public and private schools are omitted. Almshouses, model lodging-houses, and police stations also are excluded. By way of summary an interesting table is provided for each division, in which we have the total number of institutions with the number and class of their inmates under eight heads: (*a.*) Workhouses, including Industrial Schools for Pauper Children; (*b.*) Hospitals, general and special; (*c.*) Lunatic Asylums; (*d.*) Prisons; (*e.*) Reformatory and Industrial Schools, including all institutions for the reception and detention of youthful offenders; (*f.*) Barracks and Camps, forming a census of the military, and their families; (*g.*) Her Majesty's Ships; (*h.*) Orphan Asylums and other public institutions, including those Industrial Schools and Reformatories, which partake of a charitable character. As the figures thus given are supported by the full title and situation of each institution, enabling the reader to arrive at its specific character, it will be obvious how vast is the amount of information which might, with little difficulty, be collected on many interesting points. But on the present occasion we must limit ourselves to a mere general outline of the subject, the pursuit of which, in all its manifold details, would require a separate paper. And in order to show the figures clearly, we will transcribe the chief summary from the report, slightly transposing the order of the columns:

Institutions.	Number of Institutions.	Total number of inmates including officers and their families.			Number of special inmates excluding officers and their families.		
		Males.	Females	Totals.	Males.	Females	Totals.
Workhouses and Schools for paupers	730	82,539	72,428	154,967	79,736	68,328	148,064
Hospitals (general and special)	407	13,701	12,865	26,566	11,789	8,069	19,858
Lunatic Asylums ..	166	20,973	24,758	45,731	18,524	20,693	39,217
Prisons	149	24,895	7,279	32,174	23,519	5,667	29,186
Reformatory and Industrial Schools	118	8,704	3,044	11,748	8,209	2,389	10,598
Barracks	254	76,811	17,593	94,404	68,548	.. ..	68,548
Her Majesty's Ships ..	96	13,419	35	13,454	13,404	.. ..	13,404
Orphan Asylums and other Public Institutions	559	15,914	22,621	38,535	14,750	18,670	33,420
Total	2,479	256,956	160,623	417,579	238,479	123,816	362,295

It will of course be obvious, that to arrive at an idea as to the number of institutions absolutely supported by charity, or in other words, of what are rightly termed benevolent institutions, we must omit the inmates of the workhouses, lunatic asylums, prisons, barracks, and ships, and we have then only the one special head of hospitals, and the general head of orphan asylums, and other public institutions. This will give us a total of 966 as compared with 449 in 1861, the number of inmates, including

officers, under the same heads, being 65,101 in 1871, and 40,357 in 1861, or an increase of 517 in the institutions, and of 24,744 in the inmates. The increase in the number of hospitals is very remarkable—240 in ten years; but it is, we imagine, partly to be accounted for by the fact that the small but very useful institutions described as cottage hospitals, which have sprung up in the country and frequently in villages, are included under the generic term. The average number of inmates, including officers, to each hospital in 1861 was 79; in 1871 it was a little over 65, thus suggesting that the new institutions have been chiefly of a smaller class. The number of workhouses only shows an increase of 9 on 1861, but the number of inmates shows an increase of 23,527. When we compare the average number of inmates of workhouses with the population we find that there is an increase of ·3 per thousand, the inmates in 1861 having amounted to 6·5 to every thousand of the population, while in 1871 the proportion was 6·8, a result which can scarcely be deemed satisfactory in the face of the great advance of education, the growing facilities for emigration, which of course ought to tend to relieve the nation of some of its burthens in the maintenance of those who either cannot or will not work, the increased provision made for the representation of the people in the Legislature, and above all the growing prosperity of the country. It must not be forgotten also that this increase is coincident with an increased outflow of public liberality which again ought, if it were rightly distributed, to reduce pauperism. Turning to the statistics of the criminal population supplied by the above figures, we find a reduction of 30 in the number of prisons as compared with 1861; but an increase of 3,785 in the number of inmates. While, however, the proportion to the population in 1861 was 1·49 per 1,000; in 1871 it was 1·41 per 1,000, or ·08 less, a reduction which though small is a matter for intense congratulation. The proportion of male to female prisoners is about 4 to 1.

While the Census thus enables us to trace the exact number of Her Majesty's subjects in England and Wales who may be classed as "inhabitants," either from their own inclination or against it, we find another and scarcely less noteworthy table which may be described as

A Census of the Houseless and Homeless.

There is, perhaps, no part of the Report which is more full of interest than this simple record of the number of waifs and strays who, notwithstanding our boasted poor-law organization and our charitable institutions, were literally without any other place of rest than a barn or a hedge-row on the Census night.

The table is headed in the official returns "The Number of Persons enumerated in Barges, Barns, &c., in England and Wales, and returned with the General Population of Parishes, &c." It includes not only the men and women sleeping in barges and

boats, and all persons of the gipsy class, but all who were found sleeping in parks, on doorsteps, and in any public places on the morning of the 2nd of April, 1871. The result was as follows:—

	Males.	Females.	Total.
In barges, boats, &c.	7,616	3,360	10,976
In barns and sheds	1,921	437	2,358
In caravans, tents, and in the open air	4,325	3,700	8,025
Total	13,862	7,497	21,359

In the first two of these classes there has been a gradually increasing reduction for the last three decennial periods, as will be seen from the following table from the Reports of the Censuses of 1851, 1861, 1871 respectively; but in the last class the reduction in 1861 as compared with 1851, has been counterbalanced by a considerable rise in 1871:

	1851.	1861.	1871.
In barges, boats, &c.	12,562	11,915	10,976
In barns and sheds	8,105	4,314	2,358
In caravans, tents, and in the open air	7,659	7,130	8,025

In regarding these numbers, again, it must be borne in mind that, in all probability, some of the persons thus situated escaped the enumerators If, however, we take the number in barns and sheds, and those in caravans, tents, and in the open air, who form the really houseless and homeless class, inasmuch as the dwellers in barges and boats, &c., are as much at home on the water as are their brethren in the cottages on land, we find there has been a notable reduction amounting to about half the number returned in 1841. At that period the houseless and homeless numbered 20,438, whereas in 1851 they fell to 15,764, in 1861 to 11,444, and in 1871 to 10,383. At the same time it is only fair to add that the Census of 1841 was taken in June, when a night in the open air or in a barn was perhaps almost preferable to a lodging in a workhouse or refuge, whereas at the three later dates the Census night was in March or April. Even making this allowance however the reduction is considerable.

Another question of interest at all periods of the national history, is the proportion which the population bears to the area of the country, and *vice versâ*. Looking then at

The Population and the Land Question,

we find that the area of the United Kingdom in statute acres is 77,828,829, of which 37,319,221 acres belong to England and Wales; or, if we take the area of the United Kingdom as represented by 100 parts, 41·8 are in England, 6·1 in Wales, 25· in Scotland, 26·8 in Ireland; while of every 100 of the population

of the United Kingdom, 68· are in England, 3·8 in Wales, 10·6 in Scotland, 17·1 in Ireland, &c.; thus England and Wales contain seven-tenths of the population of the United Kingdom; Scotland, one-tenth; Ireland and the other is landsrather less than two-tenths. In England and Wales, the proportion of persons to an acre is ·61, and of acres to a person 1·64; in other words, if the land were equally divided, each individual would have 1·64 acre.

Another matter on which the tables afford valuable information, and specially valuable will it be in the prospect of a general election, is on what may be termed

The Electoral Census.

From this division of the work we learn that the total number of members returned to the House of Commons from England and Wales is 489, the number of electors being 2,051,128, or one member to ·23 per 1,000 of the electors. In the counties, excluding represented cities and boroughs, there are 187 members, with 80,109 electors, or one member to 2·3 per 1,000 of the electors. In the represented cities and boroughs there are 302 members to 1,250,019 electors, or one member to ·24 per 1,000 of the electors. This number, however, excludes the electors for the Universities of Oxford, Cambridge, and London. It may be interesting to add a brief statement of the changes made in the Parliamentary representation of England and Wales since the last Census. Thirteen boroughs have been disfranchised, viz., Arundel, Ashburton, Beverley, Bridgwater, Dartmouth, Honiton, Lancaster, Lyme Regis, Reigate, Thetford, Totnes, Wells, and Yarmouth. The following eleven boroughs were enfranchished by the Acts 30 and 31 Vict., cap. 102, and 31 and 32 Vict., cap. 46: Burnley, Chelsea, Darlington, Dewsbury, Gravesend, Hackney, Hartlepool, Middlesborough, Staleybridge, Stockton, and Wednesbury. Mr. Lewis adds in his Digest a list of the further changes made in this direction. An additional representative was given in 1865 to Manchester, Liverpool, Birmingham, Leeds, Salford, and Merthyr Tydfil, while the following boroughs were reduced each to one representative:—Evesham, Marlborough, Harwich, Richmond, Lymington, Chippenham, Bridport, Stamford, Chipping Wycombe, Poole, Knaresborough, Andover, Leominster, Tewkesbury, Ludlow, Ripon, Huntingdon, Maldon, Buckingham, Newport (I.W.), New Malton, Tavistock, Lewes, Cirencester, Bodmin, Great Marlow, Devizes, Hertford, Dorchester, Lichfield, Cockermouth, Bridgnorth, Guildford, Chichester, and Windsor. The alterations in the divisions of counties were as follows:—Cheshire was divided into North, Mid, and South; Derbyshire into North, South, and East; Devonshire into North, East, and South; Essex into North-West, North-East, and South; West Kent into West and Mid; North Lancashire into North and North-East; South Lancashire into South-East and South-West; Lincolnshire into North, Mid, and South; Norfolk into West, North-East, and South-East; Somersetshire into East, Mid, and West;

Staffordshire into North, West, and East; East Surrey into East and Mid; and the West Riding of York into North, Mid, and South. The increase of population in the Parliamentary boroughs, which stood at 16·1 per cent. between 1851 and 1861, rose to 23·3 in 1861–71, and of the counties, excluding boroughs, it sank from 8·9 in 1851–61 to 5·5 in 1861–71. In regard to the municipal boroughs it is stated that charters of incorporation have been granted in sixteen cases since 1861, viz., to Barnsley, Barrow-in-Furness, Batley, Bootle-cum-Linacre, Darlington, Dudley, Dunstable, Glossop, Hedon, Huddersfield, Longton, Reigate, Rotherham, Ryde, St. Helen's, and Southport.

Having thus glanced at the general results brought out by an examination of the Population Tables of 1871 as compared with those of previous periods, we will now proceed to deal with them in their relation to special localities, taking first in order

The Census of the Metropolis.

Remembering that the term London has numerous meanings and refers to districts within varying radii from equally varying centres, we will give at the outset a table from the Census Report, showing the area, the inhabited houses, and population, in 1861 and 1871, of London, within the several boundaries adopted for certain purposes.

London within various Boundaries.	Area in statute acres.	Inhabited Houses		Persons.	
		1861.	1871.	1861.	1871.
Within the Registrar-General's Tables of Mortality	75,362	359,421	417,767	2,803,989	3,254,260
Within the limits of the Metropolis Local Management Act (identical with the School Board District) ..	75,490	360,065	419,642	2,808,862	3,266,987
The City within Municipal and Parliamentary limits	668	13,298	9,305	112,063	74,897
Metropolitan Police District (excluding the City)	440,919	421,232	519,489	3,110,657	3,810,744
London within the Metropolitan and City Police Districts	441,587	434,530	528,794	3,222,720	3,885,641
Central Criminal Court District ..	268,419	407,791	487,587	3,075,780	3,657,078
Metropolitan Parliamentary Boroughs (excluding the City) ..	45,173	321,020	372,821	2,528,190	2,947,169
Metropolitan Parliamentary Boroughs (including the City) ..	45,841	334,318	382,126	2,640,253	3,022,066

In reality, the term London, or the Metropolis, is now understood as applying to the London of the Registrar-General and of the Metropolitan Board of Works, the figures respecting which are given in the first line of the above table. This district includes parts of the counties of Middlesex, Surrey, and Kent, stretching out as far as Clapton, Highgate, and Hampstead to the north and north-west; to Bow, Barking, Plumstead, and Eltham on the east and south-east; to Sydenham, Norwood, Tooting, Wandsworth, and Fulham on the south and south-west; and to Hammersmith and Wormwood Scrubs on the west. The only

difference between the London of the Metropolitan Board and of the Registrar-General is, that the Board includes Penge, which is excluded by the Registrar-General, and the hamlet of Mottingham is included by the Registrar-General as part of the Lewisham district, but is not under the jurisdiction of the Metropolitan Board. As, again, the School Board district is conterminous with that of the Metropolitan Board, it is sufficient for ordinary purposes to regard the London of the Registrar-General, of the Local Management Act, and of the School Board, as one. The Metropolitan Police District is far wider in its range. It extends over the entire county of Middlesex (exclusive of the City of London, which has its own police), and includes all those parishes in the counties of Surrey, Kent, Essex, or Hertford, of which any part is within twelve miles of Charing Cross, and those also of which any part is not more than fifteen miles in a straight line from the same place. The London of the Police District may, therefore, be regarded as containing all that is popularly spoken of as London and its suburbs. The area of this district, as furnished by Lieutenant-Colonel Henderson, Chief Commissioner of Police, is 440,584 acres, equal to 688 square miles. It may be useful to add, that the Metropolitan Postal District is about twice as large as that of the Metropolitan Board of Works, but not nearly so large as that of the Police area.

Looking at the population of the areas thus described, the most striking result obtained by the comparison of 1861 with 1871 is in the City proper, of which the population has decreased nearly by one-half, being 112,063 in 1861, and 74,897 in 1871. It will be interesting to compare this result with a return of the population taken in 1631 "by special command of the Right Honourable the Lords of Her Majesty's Privy Council." This return was called for "in apprehension of an approaching scarcity," and Sir Robert Ducie, the then Lord Mayor, was required to state, in addition to certain other particulars, "the number of mouths esteemed to be in the city of London;" in consequence of which an enumeration of the men, women, and children in the City was made. The original letter of the Council to the Lord Mayor, with a copy of the answer, is preserved at Guildhall. The population of the City proper at that date was 111,608, or very nearly equal to that of 1861. There is probably no part of the population which has fluctuated more remarkably than that of the City within and without the walls, as becomes evident from the Census returns of the eight periods since 1801.

Year.	Persons.	Year.	Persons.
1801 ..	128,269	1841 ..	123,563
1811 ..	119,655	1851 ..	127,869
1821 ..	124,137	1861 ..	112,063
1831 ..	122,491	1871 ..	74,897

In all probability the next Census will show a rise in the popu-

lation, as at the time of the last many districts were in process of de-population owing to railway and other works. But while the City population has decreased, the population of the London of the Registrar-General has increased, though at a decreasing rate amounting to 1·73 between 1851 and 1861, but 1·50 per cent. of population between 1861 and 1871. In the larger area of the Police division the increasing rate has risen from 1·86 in 1851–61 to 1·89 in 1861–71, while in the parishes lying within the Police division but beyond the Registration division the increasing rate is very marked, amounting to 4·20 per cent. of the population in the last decenniad as compared with 2·77 in 1851–61; this result, of course, proceeding from the increased means of railway communication with the suburban districts. Unfortunately we have no means of showing the population of London at work as contrasted with London at rest, but it would be most interesting to obtain a census, even if it were only approximative, of the number of persons actively employed in the great human hive on the day following the Census night.

Of the total population of London within the Registration districts (3,254,260) 1,731,109 were females, a proportion of rather more than half, and very similar to the proportion existing in 1861. From the Census of Public Institutions in the same area we find that in the 81 hospitals returned there were 9,767 inmates, of whom 7,521 were patients. In the 233 orphans asylums and other charitable institutions there were 17,906 inmates, of whom 15,531 were persons benefited. The 20 barracks contained 10,312 persons, of whom 8,301 were soldiers, 586 officers or their sons, and 1,425 women or girls. The 13 prisons contained 1,020 persons, including 528 male and 385 female prisoners. The 58 workhouses were occupied by 27,254 persons of whom 26,318 were paupers, the males and females being almost equal in number. The total area of land was 74,455 statute acres, of water, 907 of tidal water and foreshore adjacent, but not included in the area, 2,718 acres. The average of persons to an acre now stands at about forty, but it will of course be seen at once that this conveys a very imperfect idea of the distribution of the metropolitan population, there being in some districts several hundred persons to an acre.

Population Statistics of the Counties.

The variations in the rate of increase in the population of the counties of England and Wales since the first Census in 1801 is very striking. The population of *Bedford* now stands at 146,257, being an increase of 82,864, or 131 per cent. since 1801; *Berks*, at 196,475, an increase of 85,995, or 78 per cent.; *Bucks*, at 175,879, an increase of 67,747, or 63 per cent.; *Cambridge*, at 186,906, an increase of 97,560, or 109 per cent.; *Cheshire*, at 561,201, an increase of 368,896, or 192 per cent.; *Cornwall*, at 362,343, an increase of 170,062, or 88 per cent.; *Cumberland*, at 220,253, an increase of 103,023, or 88 per cent.; *Derbyshire*, at

379,394, an increase of 217,827, or 135 per cent.; *Devonshire*, at 601,374, an increase of 261,066, or 77 per cent.; *Dorsetshire*, at 195,537, an increase of 81,085, or 71 per cent.; *Durham*, at 685,089, an increase of 535,705, or 359 per cent.; *Essex*, at 466,436, an increase of 238,754, or 105 per cent.; *Gloucestershire*, at 534,640, an increase of 283,917, or 113 per cent.; *Hampshire*, at 544,684, an increase of 325,394 or 148 per cent.; *Herefordshire*, at 125,370, an increase of 36,934, or 42 per cent.; *Hertfordshire*, at 192,226, an increase of 94,833, or 97 per cent.; *Huntingdonshire*, at 63,708, an increase of 26,140, or 70 per cent.; *Kent*, at 848,294, an increase of 539,627, or 175 per cent.; *Lancashire*, at 2,819,495, an increase of 2,146,009, or 319 per cent.; *Leicestershire*, at 269,311, an increase of 139,229, or 107 per cent.; *Lincolnshire*, at 436,599, an increase of 227,974, or 109 per cent.; *Middlesex*, at 2,539,765, an increase of 1,721,636, or 210 per cent.; *Monmouthshire*, at 195,448, an increase of 149,880, or 329 per cent.; *Norfolk*, at 438,656, an increase of 165,177, or 60 per cent.; *Northamptonshire*, at 243,981, an increase of 112,366, or 85 per cent.; *Northumberland*, at 386,646, an increase of 218,568, or 130 per cent.; *Nottinghamshire*, at 319,758, an increase of 179,408, or 128 per cent.; *Oxfordshire*, at 177,975, an increase of 65,998, or 59 per cent.; *Rutlandshire*, at 22,073, an increase of 5,773, or 35 per cent.; *Shropshire*, at 248,111, an increase of 78,863, or 47 per cent.; *Somersetshire*, at 463,483, an increase of 189,906, or 69 per cent.; *Staffordshire*, at 858,326, an increase of 615,633, or 254 per cent.; *Suffolk*, at 348,869, an increase of 134,465, or 63 per cent.; *Surrey*, at 1,091,635, an increase of 823,402, or 307 per cent.; *Sussex*, at 417,456, an increase of 257,985, or 162 per cent.; *Warwickshire*, at 634,189, an increase of 427,391, or 207 per cent.; *Westmorland*, at 65,010, an increase of 24,205, or 59 per cent.; *Wiltshire*, at 257,177, an increase of 73,357, or 40 per cent.; *Worcestershire*, at 338,837, an increase of 192,396, or 131 per cent.; *Yorkshire*, at 2,436,355, an increase of 1,577,222, or 184 per cent.

The Welsh counties stand as follows:—*Anglesey*, at 51,040, an increase since 1801 of 17,234, or 51 per cent.; *Brecknockshire*, at 59,901, an increase of 27,576, or 85 per cent.; *Cardiganshire*, at 73,441, an increase of 30,485, or 71 per cent.; *Carmarthenshire*, at 115,710, an increase of 48,393, or 72 per cent.; *Carnarvonshire*, at 106,121, an increase of 64,600, or 156 per cent.; *Denbighshire*, at 105,102, an increase of 44,803, or 74 per cent.; *Flintshire*, at 76,312, an increase of 36,843, or 93 per cent.; *Glamorganshire*, at 397,859, an increase of 326,980, or 461 per per cent.; *Merionethshire*, at 46,598, an increase of 17,092, or 58 per cent.; *Montgomeryshire*, at 67,623, an increase of 19,439, or 40 per cent.; *Pembrokeshire*, at 91,998, an increase of 35,718, or 63 per cent.; and *Radnorshire*, at 25,430, an increase of 6,295, or 33 per cent.

From this it will be seen that the greatest increase in the English counties has been in Durham, where the rate of increase since 1801 has been 329 per cent.; Monmouth, 329 per cent.; Lancashire, 319 per cent.; Surrey, 307 per cent.; Staffordshire,

254 per cent.; Middlesex, 210 per cent.; and Warwick, 207 per cent.; the increase in the remaining counties falling below 200 per cent.

Having thus shown how general has been the increase of the population in every district, though in varying ratios, since 1801, it will be interesting to trace, as briefly as possible,

THE CAUSES OF THE FLUCTUATION OF POPULATION

in the ten years 1861–71, and this will be accomplished most satisfactorily by noting under the counties in alphabetical order rather than in the order of registration divisions as they stand in the second volume of the report, the reasons given by the local authorities. In *Bedfordshire*, we find a temporary cause in an influx of labourers employed on the construction of a local railway, but a permanent attracting power in the shape of "the excellent educational charities" of Bedford itself, the extension of a great agricultural implement foundry, and the general improvement of trade. Coprolite works in one place and in several cases the improvement in the straw bonnet trade—an improvement somewhat difficult to account for in a day when bonnets are made of anything but straw—are assigned as other causes for the growth of the population. In *Berkshire*, in the rural parishes, there is a generally reported decrease of population owing to the migration of labourers and young people of both sexes, but this is more than counterbalanced by the increase in the towns where, as at Reading, a biscuit factory and the establishment of schools have drawn workmen to the place, while at Windsor the Court was present instead of being, as in 1861, at Osborne. In *Buckinghamshire* the extension of the staple manufactures of chairs and woodware, the establishment of a condensed milk factory at Aylesbury—a sign of the times—and the constructon of railways are reported, but here again there is a complaint of the migration and emigration of young persons. Under *Cambridgeshire* the only note of importance is that there was a large influx of population at Newmarket from the presence of French trainers, jockeys, and others, owing to the Franco-German War. In *Cheshire* we find the flourishing condition of the hat trade, the extension of the salt trade, the prosperity of the coal, iron and wire working, and shoe trades noticed in addition to the fact that in the villages near Manchester and Liverpool there was a large addition to the number of residents of the higher classes. In *Cornwall* the population had fallen in 1871 by 2 per cent. as compared with 1861. The amalgamation of small farms and other causes are said to have led to the emigration of numbers of labourers and the stoppage of mines caused the labouring population to leave many places. In *Cumberland* the slight increase on the population of 1861 is referred to the opening of new coal pits and blast furnaces and the presence of labourers engaged on railway works. In one district also the commencement of co-operative farming is noticed. The opening up of the *Derbyshire* coal-field and the establishing

extensive iron works brought an influx of labourers to the Chesterfield district, while on the other hand the depression of the cotton trade by the American war is referred to as a cause of decrease. In *Devonshire* the increase in the last two decenniads has been so slight, amounting only to 3 per cent., that we are led to look rather for the cause of decrease than increase, and we find it frequently assigned to the amalgamation of small farms and the use of machinery in agriculture, thus reducing the demand for labour, and leading the cottagers to migrate. In one case, on the other hand, at Churchstow, near King's Bridge, an illustration in the opposite direction is furnished, where the substitution of small for large farming has brought with it a large influx of people, numerous small farms which in 1861 were held in groups, having been let to single tenants with large families. At Plymouth the Registrar attributes to the prevalence of strikes the migration and emigration of artisans and their families and the diminished rate of increase of population. In *Dorsetshire* again the rate of increase from 1861–71 was much below that of the earlier decenniads of the century only amounting to 4 per cent. This is ascribed in some cases, as in that of Poole, to the loss of the Newfoundland trade and the discontinuance of the yacht and ship-building business. In one place we find a curious cause for an increase of population in the withdrawal of the regulation made by the late landlord prohibiting the farmers from employing labourers with large families. In *Durham* the rate of increase in each ten years since 1801 has been progressive and in 1861–71 it reached 35 per cent., more than three times the rate of 1801–11. One of the chief causes assigned is the introduction of large iron works, the extension of coal mining operations, the development of the stone quarries, and the opening of new chemical works. In *Essex* the rate of increase has steadily risen since 1861, chiefly owing to the industries opened to the people in the Victoria Docks, and the growth of the suburban villages not only bringing an influx of new residents from London, but of the labouring classes. In *Gloucestershire* the increase per cent. from 1861–71 above the rate from 1851–61 is accounted for by the presence of labourers at the new docks on the Avon and other trivial causes. In *Hampshire*, where the rate of increase is lower than in the previous ten years, the cause assigned is chiefly emigration, but there is a noticeable growth in the watering places of the Isle of Wight and elsewhere. In *Herefordshire* the rate of increase was very small and has diminished from 10 per cent. in 1811–1821 to 1 per cent. in 1861–71. The main reason assigned is the absorption of small holdings into larger farms and the migration of labourers to Wales, where they obtain better wages. In *Hertfordshire* the rate of increase was larger than from 1851–61, chiefly owing to increased means of railway communication. In *Huntingdonshire* for the first time we have an actual decrease of 1 per cent. in the population from 1861–71 which is referred to emigration and the exhaustion of some extensive clay pits. In *Kent* where the

growth of the population has slightly diminished the rate of increase is still considerable and is attributed to the popularity of the watering places and other health-resorts, the extension of works at Chatham, and at the little seaport of Whitstable to the early marriages resulting from the admission of the bulk of the male population to the privileges of the Company of Free Fishers (for oysters). In *Lancashire* the rate of increase has gradually fallen since 1821. In the Liverpool district this is attributed to the demolition of houses for sanitary improvements, but in the cotton districts the closing of factories is referred to although the revival of the industry is clearly noticeable. In *Leicestershire* the growth in the ten years was higher than the previous period when the rate of increase had fallen to 3 per cent. The improvement is chiefly ascribed to the development of the shoe trade and stocking framework knitting. In *Lincolnshire* the rate of increase, though low compared with the earlier part of the century, shows a rise from 1 per cent. to 6 as compared with the previous ten years, which is ascribed to the decrease of emigration consequent upon an improvement in the condition of the agricultural classes and the extension of iron manufactures. The increase of population in Middlesex is chiefly owing to the growth and extension of the metropolis. In *Monmouthshire* iron and tin works and collieries have attracted labourers and increased the population generally. In *Norfolk* there is a decrease of 1 per cent. which seems to be universally ascribed to the migration of agricultural labourers to the mining districts in the North of England. In *Northamptonshire* there is nothing worthy of note, but in *Northumberland* the increased population is ascribed to the growth of the iron ship building trade, the extreme briskness of the steam coal trade, and the opening and extension of collieries. In *Nottinghamshire* the increase of the coal trade and the prosperity of the local industries are noted, although here again there was a counteracting influence in the migration of labourers. In *Oxfordshire* the rate of increase was too slight to require explanation. In *Rutlandshire* there is an actual and considerable decrease as compared with the previous divisions of the century, in fact the population had only increased by 200 since 1861. In *Shropshire* the rate of increase is becoming lower and lower, chiefly owing to the exhaustion of some coal pits and migration in search of higher wages. In *Somersetshire* the stoppage of woollen and other factories had caused the population to migrate, but the general rate of increase is higher than in the previous ten years. In *Staffordshire* the prosperity of the iron and coal trades and of the potteries, and the facilities afforded by co-operation for building purposes, are assigned as the causes of the increase, which amounted to 15 per cent. between 1861-71. In *Suffolk* the numbers had become almost stationary in 1861, but in 1871 there was again a tendency to rise partly owing to the growth of Lowestoft, not only as a watering place, but as a herring and trawling fishery. In *Surrey* the increase is on a gradually ascending scale, especially in the extra-metropolitan

portions where a large number of persons employed in London reside. In *Sussex* the watering places exercise an important influence and have caused a great increase in the population. In *Warwickshire* we have Birmingham as its metropolis with an increased number of factories and the extension of its suburbs, but this failed to counteract the decrease caused at Coventry and elsewhere by the depression of the ribbon, watch, and other trades at the time of the Census. In *Westmorland* the beautiful scenery of Grasmere, Ambleside, Undermilbeck, and the other centres of the Lake district continues to draw not only visitors but permanent residents, and causes a general increase in the population. In one instance, too, the reclamation of a large tract of marsh land, which has been brought under cultivation since 1861, led to the influx of a large body of labourers. In the remaining counties there is nothing worthy of special notice.

Here the limit of our space bids us pause, although there are many other features of interest in these really remarkable volumes on which it would be possible to comment without any risk of wearying the reader. To those who look at the figures merely as so many numerical tables, dull and dry as the long addition sums set to the candidate at a Civil Service Examination, it would, of course, be idle to commend their further study, but the facts which we have been able to deduce will, we trust, be sufficient to secure for them more than one additional reader, and perhaps lead to those who have the power to set about working out some of the reforms, such as the adoption of a scheme for bringing the various divisions of the country into harmony with each other, which they so plainly suggest. Nor can we conclude this brief notice of the Report without a word of congratulation to the Registrar-General, to Dr. Farr, to Mr. J. T. Hammick, and to Mr. William Clode, the energetic Secretary, on the general results of their labours. Only those who are acquainted with the long and arduous calculations involved in statistical work, and with the necessity for unremitting attention to secure such almost faultless accuracy as is here the rule, can appreciate to the full extent the merits of these folios, and it is not too much to say, that they furnish an additional claim on the public gratitude towards a Department, which, by its daily work, contributes so materially to social and sanitary reform, or at any rate, furnishes the bases on which reform may be carried out.

CHARLES MACKESON.

PART II.

ARCHITECTURE AND PUBLIC IMPROVEMENTS, MUSIC, METROPOLITAN CHARITIES, LEGISLATION, STATISTICS, AND CHRONICLE OF 1872-3.

ARCHITECTURE AND PUBLIC IMPROVEMENTS.

I. General Progress.—Art and Public Monuments.

These annual surveys of the architectural progress of the country, and of the advance made in public and sanitary works, whilst widening and varying from year to year, have to contend with the difficulty that they deal with a period which is necessarily incomplete in its scope, and are, therefore, at best but imperfect in grasp. For the most part, we have to consider things in course of formation. The beginnings require attention, but they must be handled cautiously, for the actual work commonly belies the original promise, and the completion lingers. This year, in a marked degree, whilst the announcements and the commencements of new works are unusually numerous, comparatively few of moment have advanced to the stage which permits of adequate and satisfactory examination.

Of these few, some of the most important belong to the provinces. Both our engraved illustrations are drawn from country towns, and, as may be supposed, both are from the north. The north has indeed of late been making prodigious strides. New towns have grown up; old towns have clothed themselves anew. Costly edifices for municipal and public purposes, banks, warehouses, offices, and shops have risen in the streets; luxurious villas in the suburbs; and churches, schools, and hospitals everywhere. The display may be somewhat ostentatious, the artistic element is certainly too diffident. Everywhere we miss in this abundant building what we think ought to have made itself felt, local colouring and specific character. Each of our great districts, if not every large town, has something unmistakably distinctive; and as the architecture of a country should represent its age and character, so in its degree should that of an important town or district. This of course is hardly possible where it remains the practice to call in for every prominent work the aid of our eminent, and sadly overtasked, London architects; but something would be done if our country architects looked less to them as models, and were less eager to adopt the latest metropolitan fashion. There is ample scope now for any number of local schools of architecture; and with the energy of purpose and intellectual vigour, and freshness and freedom of thought, shown in so many ways in our great industrial centres, we ought to be able to reckon upon something of real originality and

power being struck out instead of endless imitation and repetition.

From imitation and repetition, however, it seems hopeless to expect our architects, whether metropolitan or provincial, to emancipate themselves. The practice has been handed down from generation to generation till it has become the traditional principle of the school. The excess to which it has been carried in church building has led to seemingly incurable decrepitude in this great branch of English architecture. On the other hand, the enormous extension of civic architecture holds out a prospect of a better state of things. The secular mind is not inextricably steeped in mediævalism. Men of business are timid where artistic opinions are involved, but they can understand and insist that a building for which they are to pay a large sum of money, shall, before everything else, be designed with a view to the purpose for which it is required, and that its outward appearance shall correspond with its internal purpose and arrangements, and this is the basis of all good building. When architects are compelled to design in this spirit, they will soon come to perceive that the past ages have not exhausted the storehouse of invention, and that as painters, poets, and men of science have struck out new paths for themselves, so may architects, even though it be through first extending and developing the old ways. Then should we have a true and original architecture: by servile copying never.

But within the accustomed ways, and apart from the higher artistic and creative energy, however persistently some critics decry our contemporary architecture, we are satisfied that good work is being done. Never were the better class of buildings more solidly built, never perhaps with so skilful and scientific a choice and adaptation of materials, and certainly never with a more serious and conscientious effort to produce a satisfactory result. Possibly still more might even in this way be accomplished if there were a deeper knowledge on the part of architects of those constructive principles which have rewarded the investigations of civil engineers and physicists into the nature, strength, and application of materials; but this knowledge will increase with the growing interchange of ideas, and especially as the architect and engineer come to understand that they belong to but different branches of one great profession.

It is time, however, that we turned from these general considerations to the particular task we have undertaken. With the new Courts of Law no visible progress has been made, but we have the usual official assurance that there has been no avoidable delay. A vote for 68,000*l.* has been taken, and we are told that the works will now be commenced forthwith. The architect's revised estimate of the cost of the building was 750,000*l.*, but that, according to the Commissioner of Works, will certainly be exceeded: "he was not in a position to state the exact amount of the excess, but it will be a considerable sum." The tenders of the builders invited to contract for its erection, ranged from

719,000*l.* to over a million, but this contract will not, of course, nearly cover the entire cost.

The designs are said to have undergone various modifications, but little is definitely known of their nature outside the architect's office. The Commissioner of Works considers that "it would be neither practicable nor profitable to exhibit the designs publicly;" and all the information he deigned to afford the House of Commons, was that "the design comprised a stone-groined roof for the central hall, involving very large buttresses, and increased thickness of wall, and though professional opinions were much divided on this point, it is at present Mr. Street's intention to adhere to it. The general form of the building, however, remained the same." This being the state of the case, it only remains to wait, with what patience we may, the future proceedings of the architect. As last seen the design was eminently unsatisfactory. So, however, was the "approved design" of St. Paul's Cathedral; but, as we have been told by the latest historian of that noble edifice, Wren, having obtained permission to make alterations in the design, "availed himself of the leave given him to an incredible extent, and transformed his approved design into a totally different building," and we venture to hope that the architect of the Courts of Law will follow so excellent a precedent.

Steady progress has been made during the past year with the Home and Colonial Offices, which are now approaching completion. In general style and character the Home and Colonial Offices harmonize with the Foreign and India Offices, with which they group so as to form one vast structure, but possess special and distinctive, though minor, differences. The new building displays, even now, a certain dignity of outline, and much admirable work in the details, but it is so encumbered with scaffolding and so closely shut in by the opposite houses, that it cannot be seen or estimated as a whole; it will be better, therefore, to defer a critical estimate till next year, when the exterior will be completed, and the houses in King Street and Parliament Street removed. It is expected that the building will be finished by the summer of 1874, and that the original estimate, 285,000*l.*, will not be much exceeded. The widening of Parliament Street, by the removal of these houses, and the consequent opening of a continuous broad street from Charing Cross to Westminster Abbey and the Houses of Parliament, will be one of the finest street improvements made in this part of the metropolis for some years past. The architectural vista is one of no ordinary promise. Westminster Abbey and the Palace of Westminster will be seen as they have never been seen before, and Whitehall, the Treasury, and the Home and Colonial Offices will worthily lead up to them. Other improvements we may expect to follow, and some of the mean houses on the east side of Parliament Street may well give place to buildings of a nobler stamp. The Admiralty, it is reported, is to be pulled down, but this will not rank among the improvements. It is a building

that has character, dignity, and picturesqueness, and is of historical value. The loss of the Admiralty and of Northumberland House, which last we fear is irretrievably doomed, will materially damage the architectural and historical prestige of Charing Cross.

At the Houses of Parliament, the decay of the stone outside and the frescoes within goes on unchecked, and at present no means have been found to prevent its extension. The architecture of this building and its surroundings has always been a source of strife, and this year the discussion upon it proved to be the last straw that broke the official back of the late pugnacious Commissioner of Works. But we learn from the incident not only that the ground immediately beyond the Victoria Tower has been secured, and the unsightly and dangerous old buildings pulled down, but that the river along it is to be embanked and a building erected, 150 yards south of the Palace, suitable for the purposes of Royal and other Commissions. A vote was taken for the embankment, but it was announced that the new building will not be proceeded with till direct Parliamentary sanction is obtained. The embankment will be an improvement to the Palace and the neighbourhood, and so too should be the new public building: we may at least hope that it will be worthy of the site and, if less ornate, not out of harmony with the adjacent edifices.

The New Post-office is completed externally, and a large portion of the interior is occupied. Having given an engraving and general description of it in the last volume of the "Companion" it is unnecessary to dwell upon it at any length on the present occasion. There is nothing in its appearance now that it is cleared from the hoarding and scaffolding to lead to a modification of the opinion there expressed. Architecturally it must depend for its effect on its size, its evident solidity of construction, and good workmanship. Its artistic merits are few and doubtful; but the internal arrangements are said to be judicious, and its cost very small, its vast size and excellent materials and construction being taken into account. As last year the dimensions, given broadly, were somewhat overstated, it may be as well to give them accurately. The principal front, towards St. Martin's-le-Grand, and that towards Bath Street are each 286 feet long; the ends fronting Newgate Street and Angel Street are each 142 feet; the height from the pavement is 84 feet; besides which there is a light basement, and an additional attic, available for a large number of clerks, has been obtained by a modification of the internal arrangements without interfering with the elevation. Still the growth of the Post-office more than absorbs all this additional accommodation, and the great room, which was to have been a stately public hall, has had to be appropriated to clerks. The great absorption of room has been for the telegraphic department, to the growth of which there seems hardly a limit. The instrument-room, none too large for the purpose, is 125 feet by 80 feet. The total cost of the building has been about half a million,

of which more than half was for the site and compensation to outgoing tenants.

The New Burlington House also approaches completion, at least externally—the interior is not sufficiently advanced for the learned societies to have received possession of their several apartments. When this shall have been done and the building be really finished, we may perhaps recur to it and make a note upon the structure as a whole. For the present, it may suffice to refer the reader to the general description, and the engraving of the Piccadilly façade given in last year's "Companion." The attic story added to the Royal Academy has entirely destroyed the artistic character of old Burlington House – "one of the finest pieces of architecture in England," according to Sir William Chambers. "Beauty within, without proportion reigns," wrote Gay of it; now alas! whatever may be the beauty within, there is little of proportion without. It may serve, however, as another illustration of the risk that is incurred in tampering with an old building in the hope of improving its appearance. Better by far pull it down and make an entirely new one, than remove a bit here, and add a wing, porch, or storey there, and expect the result to be symmetrical or satisfactory. In this case, however, the blame must be shifted from the architect. The colonnades, on which the exterior effect of Burlington House so largely depended, were removed by superior authority, and the architect was commanded to add this attic to bring the old house into harmony with the new: perhaps the aspect of the transformed pile may be somewhat improved when the statues are placed in their niches.

The erection of the new rooms at the National Gallery on the site of the old workhouse is proceeding. Being at the rear of the present gallery, the additional rooms will effect no change in the architectural appearance of the exterior. The internal change will, however, be considerable. There are to be nine new rooms, each nearly as large as the largest in the present building. They appear to be well proportioned, and if the lighting is as good as that of the existing Italian Saloon, they will make a very satisfactory addition to the gallery. An official statement gives the assurance that these new rooms will not merely permit all the pictures at present possessed by the nation to be suitably arranged, but will provide sufficient space for any increase likely to accrue for many years to come, and at the same time furnish room for the exhibition of loan collections, if such exhibitions should be considered advisable.

Two new Architectural Courts have been added to the South Kensington Museum which the reader, who has not seen them, will do well to visit. They are of unusual size, and still more unusual height, each court being 130 feet long, 60 wide, and no less than 83 feet high. This exceptional height was given to them because they were intended to contain casts (of course, therefore, the actual size of the originals) of some of the more famous architectural monuments extant—among others Trajan's

Column (in two parts even this lofty court not being high enough to hold it entire), Adam Kraft's Ciborium, which, in the original, reaches to the roof of Nuremberg Cathedral, the immense Puerta della Gloria of the Cathedral of St. Jago de Compostella, the rood loft from Bois-le-Duc Cathedral, and the portal of the Sanchi Tope. The courts are Roman in style, and coloured with some regard to the old Roman manner. Of course no borrowed style could be found to harmonize with actual architectural specimens so varied as are those already enclosed within these two courts, ranging as they do from ancient Roman to Renaissance, and including Italian, German, French, Flemish, English, Hindu and Moorish examples. Even the architect of these courts had not the daring, or perhaps the genius, to devise an original style that should not be felt to be discordant with any of these diverse works, but even in this respect the courts are quite as satisfactory as we could fairly expect, and, apart from the contents, they are two very noble apartments. The idea of these courts, where anyone interested in architecture might study at his convenience actual casts of so wide a range of examples, was an admirable one, and it has so far been admirably carried out. But we want several more of them if they are to make provision for the study of comparative architecture. And we want, and hope ere long to see at South Kensington, a like series of Sculpture Courts, where should be brought together a full collection of the finest, and really distinctive, examples of sculpture of every country and age in which sculpture has flourished. We ought to have mentioned that there are two galleries to these courts from which the upper parts of such works as Trajan's Column may be somewhat better seen than from the floor.

A beginning has at length been made with the erection of the Natural History Museum, on the site of a portion of the Exhibition building of 1862. As may be remembered, a design was made for the Museum by the late Captain Fowke, but on his death transferred to Mr. A. Waterhouse, who was requested to revise it and superintend its erection. On examination, however, the plans were not considered to be suitable for exhibition purposes, and Mr. Waterhouse was authorised to prepare fresh designs. His new plans were then carefully worked out in conjunction with the authorities, and the design (of which there is a good engraving in the "Builder" of January 4, 1873) made and approved. Mr. Waterhouse estimated that the building would cost about 500,000*l.*; but the late Commissioner of Works, just then succeeding to office, considered this too much for a Museum, and ordered the architect to reduce his design by 150,000*l.* The consequence has been that the grand central entrance tower has been given up, and other of the ornamental features both of the exterior and interior, modified or abandoned. The saving of 150,000*l.* is a thing not to be lightly condemned, but neither is the spoiling of a great national building a small evil, and we cannot but hope that a Commissioner who has not the same aversion to "ideas of taste and beauty" may even yet reconsider his predecessor's de-

cision. The principal front of the building, which will be seen back 100 feet from the Cromwell Road, will be constructed of terra cotta, and be 675 feet long, or considerably more than twice the length of the New Post-office. There will be a plain basement, two principal storeys consisting of ranges of round-arched Italian Gothic windows, and a third storey of similar, but smaller, windows in dormers projecting from a tall roof. In the original design, as we said, there was a lofty central tower with massive towers at either end of the building: how greatly a structure of such length and repetition of fenestration will suffer if these leading features be sacrificed, will at once be understood. The Museum proper will consist of a great central hall 170 feet long and 97 feet wide, which will hold the Index and the English Natural History collections, and from which the great staircase will give access to the rest of the building. Along the front of the building, and lighted by the windows above described, will be three storeys of galleries 50 feet wide, stretching for a length of 278 feet to the right, and an equal distance to the left of the central hall; while at right angles, to these will be a series of three galleries, each 160 feet by 39 feet on the east and a corresponding series on the west of the central hall; the idea, broadly speaking, being to devote the western side of the building to the natural history collections, the eastern to the geological and mineralogical. Reserve galleries for duplicate specimens, galleries for students and workshops, studios, store-rooms, &c., in the basement, complete this vast design. Operations have now fairly commenced: the builder's contract is to be completed at the beginning of 1876.

One-and-twenty years have passed since the death of the Duke of Wellington, and the nation's memorial to her great commander remains unfinished. Some little has, however, been done during the last year. The marble-work is now all, we believe, in its place in St. Paul's Cathedral, as also much of the bronze appertaining to it. But the monument proper—the effigy of the Duke, the sarcophagus on which it is to repose, and the two side groups – are as yet only in clay or plaster, and, even as models, are far from finished. The sculptor reckons that they may be sufficiently advanced for casting within a year; but the official report lately made to the Lords of the Treasury declares that, "having regard to the experience of the past, we cannot place much reliance upon Mr. Stevens's estimate of time for completing the models, and if the present rate of progress is to be maintained, we cannot hold out any hope that the monument will be finished by the end of 1874, though, at the same time, if Mr. Stevens should be able to exert himself with greater effect the work might possibly be completed at an earlier period," with which comfortable assurance we leave the Wellington Memorial for another year. Lord Clarence Paget has bethought him of a characteristic mode of doing homage to the memory of our greatest Admiral and, at the same time, of benefiting living seamen. He has modelled a colossal statue of Lord Nelson, nineteen feet

high, and erected it on a pedestal twenty feet high, so placed as to serve as a landmark to warn vessels passing through the Menai Straits from a dangerous reef or rocks. To render the beacon as serviceable as possible the Lords of the Admiralty have had it marked on their new chart of the Menai Straits.

Mr. Foley has completed the model for the colossal seated statue of the late Prince Consort, for the Albert Memorial, Hyde Park. It will be cast in bronze forthwith. We have not heard whether the proposal to gild the statue has been abandoned. The equestrian statue of the Prince Consort, which is to adorn the western approach to the Holborn Viaduct, is completed and fixed on its pedestal, but the unveiling waits the convenience of the great personages who have been invited to perform, or to assist in performing that ceremony.

The Huddersfield memorial of Sir Robert Peel has been nearly as long in preparation as the national memorial of Wellington, though, unlike that, it is completed at last, having been unveiled with some ceremony in June. It consists of a marble statue by Mr. Theed, of the late statesman, nine feet high, mounted on a pedestal of grey Aberdeen granite. Sir Robert wears his official robe as Chancellor of the Exchequer, and is represented in the act of addressing the House of Commons. Without any strong claim to originality, the statue ranks above the average as a work of art, and the likeness is pronounced by the best authorities to be satisfactory. On the same day was unveiled, in Miller Park, Preston, a statue of Peel's colleague and successor, the vigorous partizan chief, brilliant orator, and ripe scholar, Lord Derby. It is by Mr. Noble, of Sicilian marble, eleven feet high, and stands on an ornamental granite pedestal. Like Peel, Lord Derby has on his titular robe, holds in his hand the inevitable scroll, and is addressing the House. The attitude is animated; the likeness pronounced to be good.

A monument has been erected at Penzance, chiefly by the working men of that town and neighbourhood, in honour of their famous townsman, Sir Humphry Davy. The statue of Davy, by Messrs. Wills, stands on a pedestal of native granite. Of higher merit, as a work of art, is the noble seated statue of Dr. Whewell, by Mr. Woolner, which has been placed in the ante-chapel of Trinity College, Cambridge, where it forms a worthy companion to the same artist's statue of Lord Macaulay. The memorial of Sir Joseph Paxton, erected on the terrace of the Crystal Palace, Sydenham, from the designs of Mr. Owen Jones, comprises a colossal marble bust of Paxton, executed by Mr. W. F. Woodington, on a bulky but common-place pedestal, on the sides and base of which are inscriptions, diagrams, and carvings.

At Bolton, a statue was, a few weeks back, erected opposite the new Town Hall, of Dr. Chadwick, in commemoration of his munificent generosity in presenting an Orphanage to the town, at a cost of 22,000*l*. The statue is of bronze, ten feet high, and stands on a pedestal of Cornish granite twenty-two feet high, on the front of which is a bas-relief of Mrs. Chadwick teaching a

group of orphans. The sculptor is Mr. C. B. Birch, and his work is highly spoken of. Opposite the new Bradford Town Hall (of which, as well as the Boston Town Hall, an engraving and description will be found farther on) a memorial commemorative of another local benefactor, Sir Titus Salt, Bart., is in course of erection. This will take the form of a seated statue covered by a Gothic tabernacle, or cross, with statues at the angles of the principal storey —of Justice, Charity, Temperance, and Prudence —the design being by Messrs. Mawson and Lockwood, the architects of the new Town Hall, with the style of which it is intended to harmonize. The statue of Sir Titus Salt is by Mr. A. Acton. At Leicester, a marble statue has been erected, in the centre of the town, of the late John Biggs, M.P., the work of Mr. G. A. Lawson.

Thanks to the public spirit of the Duke of Bedford, a statue is about to be erected on St. Peter's Green, Bedford, of Bedford's most famous worthy, John Bunyan. It will be of bronze, and on three sides of the pedestal will be rilievi, on the fourth an inscription. The sculptor is Mr. Boehm.

2.—Public and Sanitary Works.

The necessity for a larger, more comprehensive, and more vigorous dealing with our public and sanitary works is becoming more and more evident. The census returns and the quarterly and annual reports of the Registrar-General alike show that the population is steadily concentrating in and around our great cities and larger towns ; and that in these it has a tendency to increase in density in special localities. And along with this suggestive fact, it is to be considered that, "it is a well-established law that, other things being equal, the insalubrity of a place increases with the density of its population." These are the words of the Registrar-General, who adds, that "the fevers generated in crowded dwellings have a tendency to spread among the whole population." But not only does disease spread outwards; it may and does come from without inwards. The recent disclosures and discussions on the origin of typhoid fevers in towns, the supply of food, the disposal of town sewage and the results of that disposal, the pollution of rivers and its consequences, have gone far to popularize the view, long familiar to students of sanitary science, that in this respect town and country are mutually interlinked and interdependent : and that, in considering what is good for one, its effect on the other must not be overlooked.

The main drainage system of the Metropolitan Board of Works is now very nearly completed, the portion connected with the Chelsea embankment and the western pumping station alone remaining to be finished. This pumping station is by the Thames, at Pimlico, between the Grosvenor canal and the railway bridge, and is intended to lift the sewage and part of the rainfall of the district a height of eighteen feet into the low-level sewer, which carries the London drainage to the pumping station at Abbey Mills, where it is again lifted into the outfall sewer, by

which it is conveyed to Barking Creek. These works, which are expected to be finished early in 1875, at a cost of something under £250,000, will complete the system and relieve the Thames of the western sewage which hitherto has flowed into it. During the past year a great extent of local and subsidiary sewers has been brought into direct communication with the main sewers; and a large and costly additional sewer is being constructed under Gray's Inn Road for the purpose of relieving the main Fleet-river sewer from the storm-waters of the district north of King's Cross.

The Metropolitan Board of Works have obtained an Act empowering them to construct a new street from Charing Cross to the Thames Embankment. Northumberland House is therefore doomed. The Board is to pay the Duke of Northumberland the right royal sum of 497,900*l.* for his property; add to this the cost of demolishing the structure, and we have the rate-payers of London spending over half-a-million for the privilege of destroying the last of these princely old mansions left in their city, and building in its place some staring vulgar monstrosities such as, under the vestry-board inspiration, are certain to arise. However, it is too late to be helped, and probably, in the end the two parties to the bargain will be equally satisfied. It is only the public taste and the aspect of "the finest site in Europe" that will be outraged. Charing Cross Approach, as the new street is to be called, will be carried straight to the foot of the Charing Cross railway bridge—with the huge and hideous platform roof as a graceful terminus to the vista! The new street is directed by the Act to be constructed within seven years. Along the embankment itself very little has been done towards getting rid of its unfinished appearance. The ground claimed by the Woods and Forests has however been secured by a compromise; and a club-house is in course of erection at the western, and a large hotel at the eastern, extremity.

Good progress has been made with the Chelsea Embankment, which is in its main features nearly completed. It differs from the Victoria Embankment only in being less costly in construction and less ambitious in ornament, perhaps with no loss of grandeur. It is formed, or faced, with hammer-dressed granite, the river-wall being finished with a plain but massive parapet, with a moulded coping and occasional square pedestals. The new work extends from Chelsea Hospital Gardens, where it joins the embankment constructed some years back, to the old Battersea Bridge, presenting for that space a massive granite wall to the river, and on the land side an unbroken roadway seventy feet wide. For a considerable distance this road will be flanked by ornamental pleasure gardens formed out of the ground reclaimed by the embankment from the muddy foreshore of the river.

The necessity for providing parks and open spaces for the health and recreation of the denizens of populous towns is now happily fully recognized. Thanks to the vigorous action of the Corporation of London, there seems to be even a prospect that what remains of Epping Forest may not, after all, be enclosed

and appropriated. Hampstead Heath is secured, and the Board of Works are happily not attempting to make a trim park of it. Left to itself, with little more than watching against mischievous roughs, Hampstead Heath will in a few years recover much, if not all, of its old picturesqueness. Tooting Common has been secured for public use; and the Metropolitan Board of Works are negotiating for the purchase of the rights of the lords of the manors of Battersea and Clapham over Clapham Common, for a like purpose. Throughout the country where parks are not, they are being laid out or talked of, so that we may anticipate that before many years are past every town of even moderate size will have its park or recreation ground. The new park, which, as we mentioned last year, Miss Ryland proposed to present to the town of Birmingham, has been completed and handed over to the authorities. It has an area of about sixty-five acres; has been laid out and planted with great skill and taste, and is pleasantly situated on Cannon Hill, about two miles south of the town, and on its most picturesque side. The Sheffield town council have closed with the offer made under the will of Miss Harrison, to purchase, on comparatively easy terms, Western House Park, a prettily wooded estate of about twelve acres, conveniently situated half a mile from the town. It is proposed to convert the house, a roomy old mansion, into a museum, and to add an adjoining property of some thirty acres to the park. Mainly through the liberality of the Earl of Stamford and Warrington a park, of over fifty acres, has been provided for the inhabitants of Ashton-under-Lyne and Staleybridge: here also an old mansion has been appropriated as a museum, and a bowling-green and gymnasiums have been provided. The smaller recreation grounds that have been opened do not call for particularization.

We may now glance at what has been done and is doing in the way of providing additional dwellings for the industrial classes crowded in London and the great manufacturing towns. At the head of the several organizations for this purpose may be placed the Peabody Trust. In addition to four groups of buildings in full operation, three blocks are being built on the site of the old Magdalen Hospital, Blackfriars Road; six blocks of concrete houses are building in Bermondsey, and sites have been purchased at Southwark, of easy access by London, Southwark, and Blackfriars bridges. In all, at the date of the last report (February, 1873), the trust had provided rooms for about 1,200 families at an average weekly charge of 1*s.* 10*d.* a room. In May, 1872, there were in the Peabody buildings 847 families consisting of 3,407 persons, occupying 3,328 rooms; the average weekly earnings of the 847 heads of families were about 1*l.* 2*s.* 4*d.* The Improved Industrial Dwellings Company, of which Sir Sidney Waterlow is the chairman, has expended 240,000*l.* on the purchase of land and the erection of commodious and healthy dwellings. The company now owns 78 tenements of five rooms each, 603 of four rooms, 779 of three rooms, 3 of two rooms, and 54 shops: in all 1517, each containing a separate kitchen or

scullery, copper, water supply, and other conveniences; besides 105 small houses and shops. On the site in Pimlico Road, ceded to the company by the Marquis of Westminster, 121 dwellings and 4 shops are in course of erection, and 30 additional buildings on the company's estate at Bethnal Green. Altogether the buildings to be erected this year will provide accommodation for 230 families, or about 1,100 persons. The sanitary state of these, as of the Peabody Buildings, is very satisfactory, the death-rate being at least 5 per 1,000 below the average of the metropolis, and the disease-rate being considerably lower also. There are now 7,500 persons in all inhabiting the company's houses in the metropolis, and the chairman stated at the last annual meeting that he saw no reason why the accommodation to be provided by the company should not be doubled within the next five years. Seeing that so much good work has been done by the directors and that so much more is promised, it is not a little gratifying to find that a dividend of five per cent. has been regularly paid to the shareholders, a handsome reserve fund accumulated, and a good working balance left after payment of the last dividend. With judicious management it is clear that the provision of well-built, convenient, and healthy workmen's dwellings is not an unprofitable undertaking. But admirable as are these efforts, there is a stratum of town society they do not reach. For those who belong to this lower stratum something has been attempted by the Metropolitan Association for Improving the Dwellings of the Industrial Classes, and still more by the Society for Improving the Condition of the Labouring Classes; but the indigent population is increasing so rapidly, and the displacement of the labouring classes by the extension of public works is so continuous and enormous, that the evils of overcrowding are probably at this moment greater than ever. It has been stated on the authority of Lord Shaftesbury, and as the result of special enquiries set on foot at his suggestion, that the annual displacement of the working population by railway extension, metropolitan improvements, and the like, has for many years past averaged 50,000 annually—the total being broadly given as a million in twenty years. This, we cannot but think, is greatly in excess; but however mistaken may be the estimate, if it be reduced by half even, there can be no question as to the magnitude of the procedure, nor that it has led to an appalling amount of overcrowding, misery, disease, and death. To meet the evil by the combined action of the various societies, decent accommodation has been provided for only 20,000 persons. It is pretty clear that we must look to some further and more powerful organization to effect the improvement that is so urgently required. Happily the success that has followed the efforts of the Corporations of Glasgow, Edinburgh, and Liverpool, to grapple with a similar evil in those cities, gives an assurance that without resorting to the very doubtful alternative of calling in the aid of the Government, as some earnestly advocate, it is within the competence of properly constituted local authorities, where

they are backed by a strong public feeling, partly of themselves and partly by the more extended machinery they could set in motion, to greatly mitigate the evil, if not to provide an adequate remedy for it.

The railway system goes on extending; not as rapidly as in the days when the entire energies of the busy world of speculators, projectors, and engineers seemed pretty nearly devoted to this, for them, profitable branch of industry, but probably as rapidly as suffices to meet the increasing requirements of the country. The weekly returns of the railway traffic published in the newspapers, when they state the number of miles open, say, on September 28, 1873, and the number on the corresponding week of 1872, and add "showing an increase of 155 miles," are misleading, as some lines are almost invariably omitted. The nearest approach to accuracy is to be found in the annual report drawn up by the railway department of the Board of Trade. From that we learn that at the end of 1872 the length of line in operation was 15,814 miles; the passengers numbered 422,874,822 (three-fourths of them being third class), and the total receipts amounted to 53,235,510*l.*—considerably over a million (1,023,759) pounds per week! The most marked alteration in the traffic—and it is a change suggestive of weighty considerations—lies in an enormous extension in the goods receipts, and in a still more remarkable increase in the number of third-class passengers. The goods receipts amounted to over 29 millions, or 54·50 per cent. of the entire earnings. The number of third-class passengers carried during the year was over three hundred millions (312,736,722) as compared with thirty-seven millions (37,678,538) first-class, and seventy-two millions (72,459,562) second-class passengers, and this, notwithstanding the inducements held out to passengers travelling first and second class of return tickets, and clean and comfortable carriages, which are on most lines persistently refused to third-class passengers.

Many important works are in progress connected with the various railways, but hardly in a stage to be dwelt on. Of the London railways, the Great Eastern has cleared the ground for its enormous terminus at Broad Street; and permanently closed Sun Street, the main thoroughfare from Smithfield to the east end of London—the most outrageous proceeding that a railway company has yet ventured on in London. The East London Railway is proceeding with its daring operation of tunnelling under the London Docks, though delayed by a fatal accident. A far more formidable undertaking, however, is that of bringing Liverpool and Birkenhead into communication by a railway carried under the Mersey, here about three-quarters of a mile wide. There are to be two tunnels, with a single line of rails in each, and each about a mile long from shaft to shaft. The crowns of the tunnels will be about 30 feet below the bed of the river. The boring of the tunnels through a compact sandstone rock has been undertaken by the Diamond Boring Machine Company. This will be much the longest and most important submarine or æstuarian

railway tunnel yet constructed, and the progress of the works will be watched with much interest by engineers.

3. Churches and Chapels.

We have nothing very great, and nothing very novel, to record under this section. Greatness comes seldom: originality is no longer to be looked for. The highest ambition of the ecclesiastical architect is to imitate tolerably what was once for all well done some five or six centuries ago. Of the imitative order undoubtedly much good work has been of late achieved. It is not of a very high order, either intellectually or æsthetically, but within its limits it is done in a workmanlike, or at any rate in a tradesmanlike, manner. The new churches are of course all Gothic, the prevalent phase of Gothic being late First, or early Second Pointed, usually of French type, the characteristic features, windows, mouldings, &c., of the First Pointed predominating in some examples, of the Second in others, but intermingled in both. Brick is still much used, but its popularity appears to be waning, and certainly fewer churches are being built of a dirty white or dull drab, with red lines ruled along the walls at regular or irregular distances by way of decoration. So far there has been a gain, especially as to exteriors; unhappily the tawdry and puerile crudenesses of internal colouring, the tinsel and trumpery, have rather augmented than diminished, but that belongs to something else than art and architecture: and so we pass on to our inventory of new churches.

St. Luke, Redcliffe Square, South Kensington, is intended to supply the spiritual needs of a little town of a thousand houses, which have sprung up, where but eight or ten years ago only market gardens were to be seen. The building will accommodate 1,000 persons without galleries, and might be made to accommodate many more. It consists of nave and aisles, chancel and apse, a tower and spire 150 feet high at the north-east angle, a porch on the south, and beyond it at the south-west angle a polygonal vestry with a tall pyramidal roof. It is built of Kentish rag on brick piers, and is a substantial and well-finished structure. The exterior is somewhat unnecessarily broken up perhaps, but it is of its kind a handsome building, and the steeple is effective. The cost was somewhere about 16,000*l*. Messrs. George and H. Godwin were the architects. In the same neighbourhood Mr. Conybeare has on hand a spacious Romanesque church with a tall campanile and an apsidal end, St. Patrick's, Cromwell Road, which may be worth examination when completed; and Mr. J. Brooks, another, dedicated to St. John the Baptist, a monastic looking brick church with a heavy tower.

St. Saviour's Church, for the Deaf and Dumb, Oxford Street, mentioned in a previous volume, has been opened, though more funds must be obtained before the design can be completely carried out. It is small, being intended for a congregation of under 300, and owing to the confined site has some peculiarities of form. The nave is square with an octagonal roof, and short

transeptal recess, and an apsidal chancel, opposite a corresponding recess. Under the church is a lecture hall of nearly the same dimensions. The exterior, of red brick with Bath stone dressings, is attractive, without exhibiting any undue amount of decoration. The architect was Mr. A. Blomfield.

Two new churches have been added by Messrs. Newman and Billing to the suburban catalogue. Holy Trinity, Penge, of red brick and stone, is First Pointed in style, and comprises nave, aisles, and vaulted chancel, and a tower, which, however, is as yet only carried up to the first stage. It will accommodate 1,000 persons, and has cost 7,000*l*. Their other church, St. Luke's, Homerton, is of Kentish rag and Bath stone, and, like that of Penge, waits happier times for the erection of the spire. It has 750 seats, and cost something over 5,000*l*. At Spring Grove, a cruciform church, of Kentish rag and Bath stone, has been erected from the designs of Mr. A. J. Phelps; at High Beech an elegant little cruciform church designed by Mr. A. Blomfield, with a stone spire visible for miles around; and others have been completed, or are approaching completion, at Dulwich, designed by Mr. C. Barry; at Honor Oak, Sydenham, designed by Mr. Oakley; at Hoxton, designed by Mr. Ewan Christian; in the Seven Sisters Road, Hornsey, and elsewhere. Those newly begun are still more numerous.

The following are some of the more noteworthy of the country churches which have been completed during the year. St. Gabriel's, *Hanley Castle*, on the road from Hanley to Malvern, has been erected on a site presented by Sir E. Lechmere. It was designed by Sir Gilbert G. Scott, R.A., and is in that variety of the First Pointed style which he has rendered so thoroughly his own; is constructed of Cradley stone with Bath stone dressings; and consists of nave and aisles with clerestorey, chancel, and tower at the north-east angle, the lower part forming the vestry. The east window has five lancet lights under a square dripstone, the west window four, with quatrefoils in the heads. The tower is in three stages, and carries a brooch spire with gables; in it is a peal of six bells. Like all Sir Gilbert's recent churches it has an elaborate reredos, and generally there is a good deal of quiet ornament in the chancel. It will accommodate a congregation of about 400, the seats being all free and unappropriated.

Mr. G. E. Street, R.A., has completed another of the churches with which Sir Tatton Sykes, Bart., is so liberally endowing his Yorkshire estates. St. Peter's, *Helperthorpe*, is small but solidly built, and richly decorated inside. It is of local stone with red tiled high-pitched roof; is First Pointed in style, and consists of nave and chancel, tower and spire, with stair turret, vestry, and porch. All the windows are of painted glass by Clayton and Bell. Three other churches, Lutton, Duggleby, and Kirby Grindalyth, are in course of erection at the cost of Sir Tatton Sykes.

St. Clement, *Bournemouth*, is an elegantly finished church, built at the cost of Edmond Christy, Esq., from the designs of

Mr. Sedding, of Bristol. It is Second Pointed in style, and consists of a nave and broad aisle, with a deep and richly decorated chancel separated from the nave by a lofty rood screen, sacristry, chantry chapel, organ chamber, &c. The choir stalls are of oak, carved with representations of the Annunciation, and the Nativity, and an effigy of the founder offering the church "to the glory of God, and in honour of St. Clement."

St. John the Evangelist, *Woodley Green*, Berks, designed by Mr. H. Woodyer, and erected at the cost of the late R. Palmer, Esq., of Holme Park, has been consecrated, and is an unusually good example of a country village church of the ritualistic class. It is of flint and stone; consists of a nave and aisle, with a chancel divided from the nave by three arches, from the central one of which the rood, or cross, is suspended, after a fashion more common in continental than in English churches. The shafts supporting these arches are of dark Forest of Dean stone; the reredos is of alabaster and marble, with a representation of the Crucifixion in high relief. The east window is filled with painted glass by Messrs. Hardman, of Birmingham.

For the other churches, it will be enough to give a list (compiled from the "Builder" and other professional journals, the illustrated and local newspapers, and private information), arranged, as in former years, under the First and Second Pointed (or Early English and Decorated) styles, though, as we observed last year, a large proportion of the churches now erected belong rather to the period of the transition from one style into the other, and contain features belonging to both. When nothing is said to the contrary, the churches, unless very small, will be understood to comprise nave, aisle, and chancel, with of course a vestry, usually a tower, and most often a spire.

Among the churches First Pointed in style are:—St. Michael and All Angels, *Didmarton*, near Tetbury, Gloucestershire; cruciform; of local stone, presented by the Duke of Beaufort, with Bath stone dressings; open timber roof; windows filled with painted glass; architect, Mr. T. H. Wyatt. Christ Church, *Gateshead;* has apsidal chancel, with five gablets, and a bell-turret at the north-west angle; 600 sittings; cost 6,100*l.*; architects, Messrs. Adams and Kelly, of Leeds. St. Martin, Oldham Road, *Manchester;* 550 sittings, spire to be built when funds permit. St. Andrew's, *Oldham;* of brick and stone; nave and aisles, chancel and south transept, and tower, of which, however, only the lower part has yet been erected; cost 4,400*l.*; architect, Mr. J. Lowe, of Manchester. Holy Innocents, *Fallowfield*, Manchester, cost 9,000*l.* All Saints, *Hutton*, near Billericay, Essex, on the site of the old church, the tower and porch of which have been retained and restored; of flint, with Bath stone dressings; some good carving and internal decoration, and several painted glass windows; architect, Mr. G. E. Street, R.A. *Highurst Wood*, near Buxted, Sussex; of local stone; nave and apsidal chancel, with bell-turret; 260 sittings, cost 3,000*l.*, defrayed chiefly by Colonel Harcourt; architect, Mr. E. Christian;

close to it a parsonage and a school for 100 children have been built. *Newsome*, near Huddersfield; nave with north aisle and chancel (the east window Second Pointed); 470 sittings, cost 3,000*l.*; architect, Mr. W. H. Crossland. St. John the Evangelist, *Ockley Green*, Surrey; of brick and stone; nave and chancel. 200 sittings; architect, Mr. G. R. Clarke. St. Luke, *Brierfield*, near Burnley, Lancashire; interior rather richly decorated; architect, Mr. J. Green. St. Stephen's, *East Hardwick*, near Pontefract, Yorkshire; on the site of the old parish church; cruciform; 230 sittings; cost 2,100*l.*; architect, Mr. Davis, of Leeds. *High Toynton*, near Horncastle; on site of the old parish church; of local stone with Ancaster stone dressings; 100 sittings; architect, Mr. E. Christian. *Bishop's Itchington*, Warwickshire; on the site of the old church; of Warwickshire blue lias with Bath stone dressings; has nave and north aisle, chancel and vestry; 700 seats; cost 3,000*l.*; architect, Mr. E. Christian: in connection with it, schools and a new vicarage have been erected. St. Bartholomew, *Ripleyville*, Bradford, Yorkshire; of stone, faced in the interior with brick; 750 sittings; cost 7,500*l.*; architects, Messrs. Healey, of Bradford. *Butterton*, near Leek; cost 1,700*l.*; architect, Mr. E. Christian. St. James, *Coundon*, near Bishop Auckland, Durham; of local stone; has nave, north aisle, apsidal chancel, and large porch on the north-west; 530 sittings; cost 3,000*l.*; architect, Mr. E. Christian. *Llanfachreth*, near Dolgelly; on the site of, and partly from, the materials of the old church, the tower of which has been retained and repaired; consists of nave, chancel, and south porch; architect, Mr. B. Ferrey, F.S.A. St. John the Baptist, *Crowthorne*, near Sandhurst, and in close proximity to Wellington College; of red brick, with Bath stone dressings; architect, Mr. A. Blomfield. St. Peter, *Sidford*, near Sidmouth; at the cost of the Rev. G. T. Comyns; of brick with Bath stone bands and dressings: the windows are filled with painted glass.

Among the churches Second Pointed in style, the following have been completed:—*Eastwood*, Rotherham, Yorkshire; of local stone lined with Hooton stone; comprises nave, with aisles and clerestorey, chancel, tower and spire at the south-west, and spacious north porch; open timber roofs of high pitch; 650 seats; architects, Messrs. Barry, of Liverpool. St. Leonard, *Newark*; of Ancaster stone with Bath stone dressings; nave and chancel with aisles; bell-turret and porch; 600 sittings; cost 4,000*l.*; architects, Messrs. Evans and Jolly. St. Matthew, Moorfields, *Bristol;* of Pennant stone with Bath stone dressings; cruciform; but at present only nave, south aisle, south transept, apsidal chancel and lower part of tower have been constructed, affording accommodation for 450 persons; when completed, it will accommodate 700, chiefly, as is proposed, of the working classes; architect, Mr. J. Neale, of Bristol. St. Peter, *Church Lawford*, near Rugby, on site of the old parish church, and in the same style, the chancel being First Pointed; some of the old roof timbers, carvings, and tracery, are worked up in the new building;

cost 5,000*l.*, of which the Duke of Buccleuch contributed 2,500*l.*; architects, Messrs. Slater and Carpenter. *Enmore*, near Bridgewater; parish church rebuilt, except the tower, at the cost of Mr. Broadmead, of Enmore Park; graceful in design and carefully finished; architect, Mr. B. Ferrey, F.S.A.

We have said so much in past years on the subject of church restoration generally, that, to avoid repetition, we shall on the present occasion confine our remarks to a brief record of what has been done during the year at our cathedrals. The "adornment," or "completion," or "transformation," as it is variously termed, of the interior of St. Paul's, has not proceeded beyond the stage of incubation. Mr. Burges, the architect called in to draw up a general scheme of the pictorial and other decorations, has not yet submitted his designs to the committee, or, if he has, they have not been brought before the public or the profession. On the other hand, Mr. Penrose, the surveyor of the cathedral, has exhibited a very elaborate series of drawings, showing the principles on which he would proceed if the work were entrusted to him, and the subjects he would have represented. But then these drawings have no official sanction, nor, so far as we know, official recognition. There are, in fact, two official architects, of wholly different schools, tastes, and principles, employed in making designs for the decoration of the interior, as a whole and in detail; and however affably they may just now walk hand-in-hand, smelling at the same nosegay, we cannot but fear that the day of dissonance will arrive, and a new element of confusion be added to the many which already bewilder the puzzled public. Meanwhile the funds accumulate. The national thanksgiving for the recovery of the Prince of Wales was made the occasion of a special appeal for assistance towards "the completion of St. Paul's," and with so much success, that 60,000*l.* are said to be in hand. Plainly something must be done with the money. We confess to thinking that there are many ways in which a portion of it might be much better spent than on Mr. Burges's saints and symbols, or Mr. Penrose's mosaics and gilding. There are the egregious Munich painted glass windows; no better means of spending a few hundreds out of these thousands could possibly be conceived than that of removing them and putting up in their place plain grisaille glass. The pillars which supported the great south transept organ might properly be sent after the organ to the Clifton Music Hall. The columns and entablature which form the inner porch at the north entrance, might be replaced where they stood of yore; and, in short, everything that has been done to the interior during the last ten years be undone—except the cleansing—and then the committee would be in a position to set about "the completion of Wren's St. Paul's," in harmony with his original intention, if they could find a man with Wren's breadth of mind, vigour of intellect, and capacity for work, and would leave him without too much interference to carry through what he undertook. It would then probably be found that the efficient decoration of

St. Paul's is a much simpler affair than would seem from all the clatter that has been made about it, and would be far more satisfactorily performed by the exercise of sound common sense and artistic skill and taste, than by any amount of familiarity with mediæval symbolism and ecclesiastical decorative art.

The exterior alterations at the west of the cathedral will effect a great improvement. The boundary wall and tall railings, against the erection of which Wren earnestly protested, will be removed, and a semi-elliptical space, marked out by a range of low polished granite pillars, which just include the statue of Queen Anne, be laid down with an ornamental pavement, the rest of the west end of the churchyard being thrown into the road-way. This space will be left open, except on great ceremonials, when it will be shut in by a temporary barrier made to fit on the neckings of the granite pillars. The portico is to be closed every night by an iron fence, which can be raised and lowered at pleasure by machinery placed in the vaults. A further and important improvement is the removal of the steps and low side walls from the western portico, and the substitution of steps with returns, according to Wren's original drawings. The removal of the rails and the opening of this end of St. Paul's Churchyard will enable the west end of the cathedral to be seen as it has never been seen hitherto.

At Westminster Abbey no great work has been accomplished this year. The elaborate reredos designed by Sir Gilbert Scott, has received its last touches, and the carved work, canopies, and other decorative features connected with it are all in their places. Something further has been done to the cloisters. The filling of the windows of the Chapter House with painted glass has happily been deferred: it would have been well if the filling of some of the cathedral windows with painted glass lately had been deferred also.

The works that have been so long in progress under the direction of Sir Gilbert Scott, for the restoration of Worcester Cathedral are drawing to a close, their completion having been somewhat delayed by the munificence of Lord Dudley, who, thinking that the blue slate flooring which was being laid down in the nave would be unsuitable, offered to pave it instead with marble, to fill the great west window with painted glass, and to colour and decorate the roof of the aisles, transepts, chancel, and Lady Chapel, with minor works—all now nearly finished. The mortuary chapel of Prince Arthur, the elder brother of Henry VIII, and the tomb of King John, have been restored at the cost of the Government, but in very questionable taste. The works at Gloucester Cathedral have been proceeding, but the chief event of the year was the unveiling, with a masonic ceremonial, of a large and costly reredos, rich in statuary and carving, designed by Sir Gilbert Scott, and presented to the cathedral by the freemasons of the province. The construction of the new nave, and western towers of Bristol Cathedral, from the designs of Mr. G. E. Street, R.A., is reported to be making satisfactory

progress. Up to the present time, about 30,000*l.* have been expended, and if funds be forthcoming with sufficient regularity, it is believed that the nave might be completed by the summer of 1875. The works at Wells Cathedral are being steadily advanced under the direction of Mr. Benjamin Ferrey, F.S.A., and bearing in mind what is involved in the preservation of the sculpture of Wells Cathedral, since the destructive restoration of the Lincoln statuary, almost the only vestige on a great scale of our old English sculpture, it is not a little satisfactory to have the distinct and positive assurance of Mr. Ferrey, that the sculpture of the west front has been preserved intact: "Not a figure has been touched, nor has any ancient sculpture been meddled with whatever. The work there has been confined to the reparation and renewal of the constructive features, which are essential to the stability of the front, and every piece of sculpture has been most carefully preserved, without the slightest attempt at so-called restoration." At Exeter, the work has been, we fear, more thorough—though Sir Gilbert Scott prides himself on being a conservative restorer. The transepts, choir, Lady Chapel, and indeed the entire eastern half of the interior has been renovated, the bishop's throne remodelled, and an elaborate new reredos erected. The exterior has been renewed in a like thorough manner; but the sculpture of the west front has happily been left untouched. The restoration will cost at least 40,000*l.*, the larger part of which has been subscribed—the dean and chapter providing more than half the total amount. The work of restoring the other great west-country cathedral, Bath Abbey Church, is also being quietly but steadily prosecuted, Mr. Ferrey here undertaking the general supervision.

Ripon Cathedral, after having been ten years in hand, was formally re-opened on the completion of the nave at the end of last year. Some 40,000*l.* have been expended upon it, and the building, under the skilful direction of Sir Gilbert Scott, has been throughout put into a state of thoroughly substantial and ornamental repair. When taken in hand it was in a very dilapidated condition. The important works at York Minster, under the direction of Mr. G. E. Street, R.A., seemed to be proceeding satisfactorily when we saw them towards the end of last year; we have not received any very recent report of their progress. The interior of Durham Cathedral when we visited it about the same time was too much encumbered with scaffolding, and altogether was in too chaotic a state to allow a fair estimate to be made of what had been accomplished, but it certainly appeared to us that more was being done in the way of re-chiselling and scraping than was desirable. There is little fear, however, that such havoc will be committed as when a previous "restoration" was perpetrated on the exterior. The choir is boarded off in order that divine service may be performed in it during the restoration of the body of the cathedral.

Sufficient progress has been made with the works at Chester Cathedral to allow of its being again opened for service, but a

great deal remains to be done. From its dilapidated condition it has been found necessary virtually to rebuild considerable portions and to reface others. Over 50,000*l.* have already been expended out of an estimated total cost of 70,000*l.* Bangor Cathedral, which, like Chester, was deemed by Sir Gilbert Scott to require partial re-building, has also been re-opened. The transepts and part of the tower have been rebuilt, the choir and some other parts restored and decorated; the nave, upper part of the tower, spire, and other portions remain to be done. Some 23,000*l.* have been expended; the remaining works will require at least 7,000*l.* more. At Salisbury the work carried on during the past year has been confined mainly to the decoration of the choir. A new pavement of encaustic tiles and black and white marble has been laid down, the roof elaborately painted and the carvings of the stalls renewed. At Christ Church, Oxford, the works have been of a more extensive and bolder kind. The nave has been lengthened some 20 feet and a new entrance opened from the great quadrangle, the well-known "Tom Quad;" the screens have been removed from the transept chapels, and the whole length of the transepts opened out; and the choir has been extended and completely renovated, a new circular window with two of Norman character below it being substituted for the old Third Pointed east windows. The stonework of the exterior has been renewed throughout, and the vaulting of the cloisters completed. In all, the restoration will have cost little short of 30,000*l.* With a note of the progress of the extensive works at Rochester Cathedral, we may pass from this part of our subject.

The churches and chapels of the Wesleyan Methodists do not usually possess much architectural character, but collectively they are of considerable importance. In the report of the Chapel Committee, presented to the Conference in August, 1873, it was stated that during the past year, 85 chapels had been built, at a cost of 126,901*l.*; 42 others altered and enlarged, at a cost of 23,317*l.*; and that the erection of 135 chapels, to cost 218,462*l.*, and the alteration and enlargement of 88 others, at a cost of 46,426*l.*, had been sanctioned. Among the chapels completed, one of the largest in the neighbourhood of London, is that opposite the Archway Tavern, at the foot of Highgate Hill. It is a cruciform Romanesque building of light yellow brick with terra cotta dressings, 110 feet long and 44 wide, the transepts being 95 feet across. The exterior is not without character, the interior is light, cheerful, and displays more ornament than is common in Wesleyan chapels. The architect was Mr. J. Johnson. Barry Road Chapel, Peckham Rise, designed by Mr. C. Bell, is in the fashionable Gothic style, consists of nave and aisles, gallery and clerestorey, chancel with apsidal termination, and tower and spire 105 feet high. None of the newly-opened country chapels claim particularization. The Wesleyan Reform, the New Connexion Methodists, and other offsets from the original body, have also opened many new chapels in various

parts of the country, and some of large size, though few of any architectural pretension.

The Congregationalists of all the Dissenting bodies display most architectual ambition. They have in progress in London three buildings of more than average rank—the Memorial Hall, Farringdon Street, by Messrs. Tarring, the principal façade of which promises to be a very effective specimen of collegiate Gothic; the City Temple, a spacious and costly classic structure, rising in close proximity to St. Andrew's Church, Holborn; and Christ Church, Westminster Bridge Road, an elaborately orthodox Gothic pile, with a steeple 220 feet high. This last will be of some interest, as the plan deviates from that of an ordinary church in a way that seems to offer some advantages for congregational purposes. It is to be a cruciform church; a short nave, chancel, and transepts meeting in a spacious octagonal centre—an idea suggested to the architects (Messrs. Paull and Bickerdike) by the ground plan of Ely Cathedral.

In the country the most noteworthy Congregational church is one in Trumpington Street, *Cambridge*, designed by Mr. J. Cubit. In style it is late French First Pointed, the chief feature of the exterior being the tower 130 feet high, which faces the street, and has in the base a large entrance porch, above it a circular window, which lights the end gallery, and terminates in an octagonal belfry stage, which is crowned by an octagonal stone roof. The body of the church consists of a nave and aisles, 60 feet by 54; the nave being divided from the aisles by one clustered pier on each side, and opening at one end into the entrance porch and at the other into a polygonal apse for the use of the choir. The pulpit being placed in front of the north pier of the chancel, the entire congregation has an unobstructed view of the minister. The exterior of the building is of Yorkshire parpoint, with dressings of Ancaster stone; the interior is faced with ashlar with bands of red Wolverhampton stone; the roof is a hammer beam open timber one. Seats are provided for 700 persons; the cost exceeds 8,000*l.* Toxteth Park, *Liverpool*, is a cruciform chapel, late First Pointed in style, with a tower and spire about 160 feet high. As in the church just noticed, the interior has been planned so as to afford the whole of the congregation the greatest facility for seeing and hearing. It has accommodation for 950 persons and has cost about 7,000*l.* The architect was Mr. H. H. Vale, of Liverpool. Other churches and chapels have been built at—*Belper*, early Second Pointed in style, with a tower and spire 120 feet high; 550 sittings, cost 4,000*l.*; architect, Mr. G. Woodhouse, of Bolton: at *Dedham-on-the-Stour*, from the designs of Messrs. Salmon and Rhodes; at *Brampton*, near Chesterfield, from the designs of Mr. Kent; at *Holbeach*, a Romanesque building of white brick and stone, designed by Mr. Tait, of Leicester; at *Stainland*, near Halifax, a Gothic building with a tower and spire 120 feet high, designed by Messrs. Shaw; at *Tettenhall*, near Wolverhampton, a Gothic building with a clock turret at the north-east angle 70 feet

high, designed by Messrs. Bidlake and Fleeming, of Wolverhampton.

The most important Baptist chapel opened during the year is Sion chapel, *Bradford*, a spacious Italian edifice, designed by Messrs. Lockwood and Mawson, the architects of the new Town Hall. The façade has a range of Corinthian columns and pilasters which support an ornamental pediment; the interior is planned primarily to provide an unobstructed view of the pulpit and baptistery and to secure a good acoustic effect, but there is also much of quiet embellishment. Behind the pulpit is a choir gallery with a recess for a large organ. With the galleries the chapel will accommodate a congregation of 1,200. Including a large school room and several class rooms in the rear, the cost will exceed 18,000*l.*

The two most splendid Roman Catholic Churches are those of St. Francis, *Manchester*; and Our Lady and St. Philip, *Arundel*, but these were sufficiently described in the "Companion" for 1873 (pp. 175–6). Others of a less pretentious character have been consecrated at *Harrow*, dedicated to Our Lady and St. Thomas of Canterbury; St. Andrew, *Newcastle*, Romanesque, by Mr. A. Dunn; at *Stokesley*, near Stockton, Yorkshire, a Gothic building designed by Messrs. Goldie and Child; and elsewhere.

The New Jerusalem Church (Swedenborgians) who have since Swedenborg's time met at Cross Street, Hatton Garden, are about to remove to a site by the Athenæum, in the Camden Road, where they are building a new church and schools, and where will be the chief seat of the sect. The church is Second Pointed in style, of Kentish rag, cruciform, with a semi-circular apse and lofty tower. The school is of the same style as the church but of brick instead of stone.

4. Buildings for Public Purposes.

One of the most observable circumstances in these annual records is the increasing number, splendour, and costliness of the buildings erected for municipal purposes. Both our illustrations of representative buildings are taken from newly opened edifices of this class. This may be accepted as an obvious testimony to the still increasing prosperity of our larger commercial and manufacturing towns and to the public spirit of their inhabitants; whilst in an architectural point of view the desire shown in all these places to obtain for the town the best possible building at almost any cost cannot but be considered as of good augury. Where such a demand exists there will be a corresponding effort to supply it. And municipal and civic architecture is, as we observed before, that by which, much rather than by ecclesiastical, we may anticipate artistic renovation. Manufacturers and merchants are not archæologists, and they are not trammelled by symbol and dogma. They require convenience and splendour: they care nothing whether a building is in strict accordance with 13th century precedent, or is of a kind that a mediæval architect

Town Hall, Bolton-le-Moors.

had never heard of. Out of this absolute freedom and abundant opportunity, some artistic originality ought to arise. Architectural form and architectural capacity are not shut up to what has already been produced in any age or country. For stereotyping the forms and style of churches there may be, as ecclesiastics teach, some sufficient reason; there is none for making our municipal buildings, warehouses and shops after any such rigid pattern—if forms and decorations more convenient for the actual purposes, and expressive of the thought, feelings, and character of the day can be devised. The two Town Halls we proceed to notice have no title to any such originality. Rather they are to be regarded as representatives of the two opposed schools of current imitative architecture, the classic and the mediæval: but they are both important works of their class, and they are the productions of local and provincial architects.

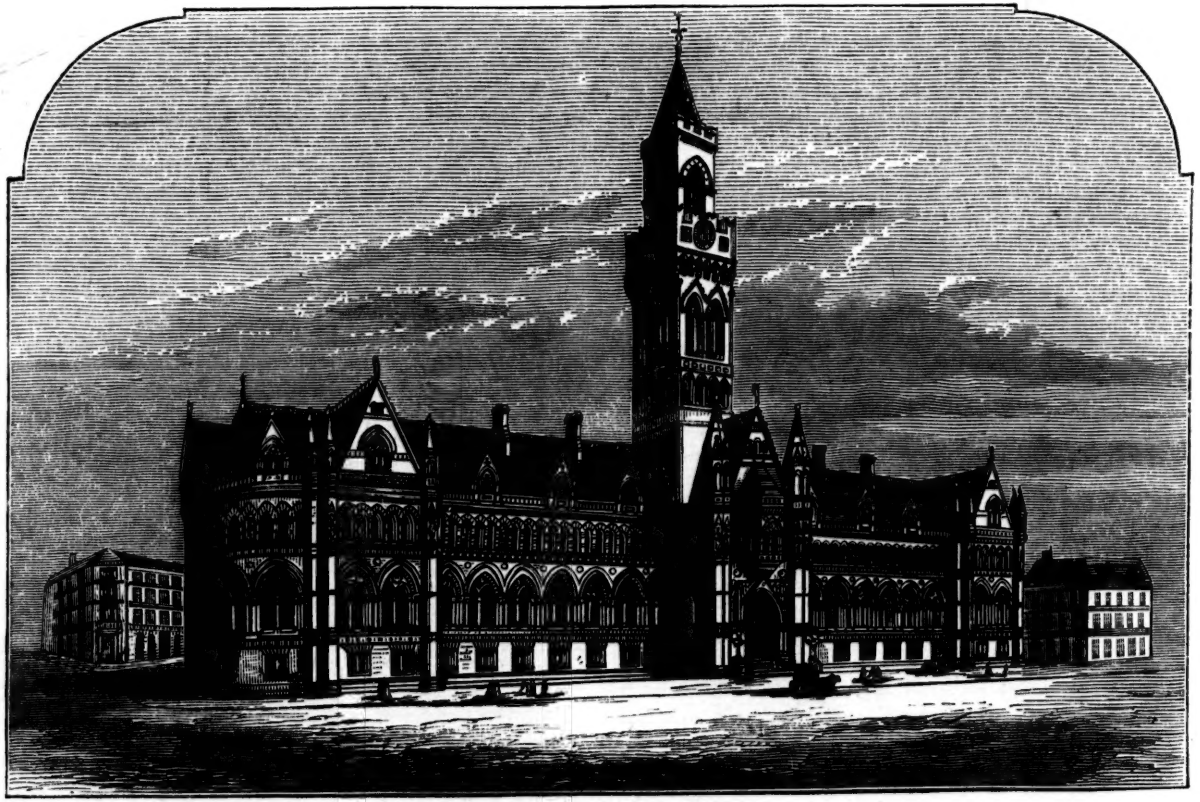
The Town Hall of Bolton was opened by the Prince of Wales, on the 5th of June last, with considerable ceremony. It occupies an excellent site—Town Hall Square—in the centre of the town, with a broad open space in front, and streets of sufficient width on the other three sides to admit of its being seen to advantage from every point of view. The engraving, which has been carefully reduced from a geometrical elevation and photographs, kindly lent for the purpose by the architects, will show better than any description the general character of the exterior. As will be seen, the style is classic, of a Roman type of the best period, the tower, however, belonging rather to the Italian Renaissance in its leading features. The building rests upon a massive rusticated basement, devoted to the borough police courts and offices. Above this, the main building rises in two storeys, a series of Corinthian columns being carried round three sides of the building, engaged at the sides, and detached in the principal front. Over these, again, are the architrave and cornice, surmounted by an open balustrade, with piers at intervals crowned by vase terminals. The main feature of the façade, which faces the east, is a well proportioned, boldly advanced and recessed hexastyle portico, the pediment of which has an effective marble group, by Mr. W. C. Marshall, R.A., representing Bolton, as the central figure, supported by Manufactures and Commerce on the right and left, and other symbolical figures at the extremities. The importance of the portico is greatly increased by the lofty flight of steps which leads up to it. The dimensions (without including the projecting portico) are about 205 feet by 160. The height to the top of the balustrade is 63 feet, the great hall behind the main walls rising 18 feet higher. The clock-tower is 200 feet high. The four ventilating towers at the angles, rise to about 100 feet from the ground. The basement is of Horwich stone; the principal front of Halifax and Darley Dale stone; the sides and back of Huddersfield and Longridge stone. Every part is carefully wrought, and the whole presents an excellent example of masonry.

Looking at the building as a whole, one cannot fail to be im-

pressed with its solid grandeur and dignity. The tower is, perhaps, the least satisfactory feature, being too much broken up for the body of the building, which it further, from its height and broken outline, has a tendency to dwarf ; it is seldom, however, that a tower can be made to harmonize with a strictly classic façade. The miniature pediments and terminals of the ventilating shafts are also out of keeping with the largeness of manner of the bulk of the building. We should have preferred, too, to see the walls of the main structure terminate in a plain attic, with pilasters instead of an open balustrade ; but here, probably, the architects thought that some play of light and shade was required to detach this from the attic of the great hall which rises behind it, and to connect the severer forms of the building with the more florid architecture of the tower. Still, whatever drawbacks a minute criticism may find, it is beyond question, as a classic building, a very noble one, and one that reflects honour on the town.

The interior consists of a great central hall, 112 feet long, 56 wide, and 56 high, running north and south, with a continuous corridor round it, outside of which are the various municipal offices and business rooms, to all of which there is ready access from the corridor—an arrangement which is found to be very convenient. The great hall is a well-proportioned room, capable of seating 1,800 persons comfortably ; has a deeply coffered ceiling, an orchestra and great organ at one end, and a light gallery running round the other three sides ; and is very richly, perhaps too richly, decorated. The council chamber, 47 feet by 32, the mayor's banquetting room, 68 feet by 24, and the mayor's reception room are also richly decorated apartments, and there are, besides, sessions courts and a great array of offices. The total cost of the building and site has been about 150,000*l*. The architects were Messrs. William Hill, of Leeds, and George Woodhouse, of Bolton ; it being understood that the former gentleman is responsible for the design, whilst the latter, as resident architect, has superintended the erection.

If Bradford was not, like Bolton, graced with the presence of royalty at the opening of her new Town Hall, she made amends by organizing, for the occasion, perhaps the most remarkable trades' procession that has been seen in England for centuries, and by giving herself up to an unrestrained holiday on the occasion. Bradford is, in fact, very proud of her new Town Hall, as she has good reason to be. Omitting those of Liverpool, Birmingham, and Manchester, it is one of the richest, costliest, and most effective of its class yet erected. It has been built from the designs of Messrs. Lockwood and Mawson, of Bradford and London, the architects of the Bradford Exchange (described in the "Companion" for 1868, p. 168), hitherto the most important Gothic building in Bradford. Like the Exchange, it is of florid Venetian type, and is built of the beautiful white Cliffe-Wood freestone. We refer to the engraving, which has been reduced from a drawing kindly lent for the purpose by the



Town Hall, Bradford.

architects, for the general character and aspect of the building. The dimensions of the principal front, shown in the engraving, are—length 275 feet, height 70 feet; tower, 23 feet square and 200 feet high. The extreme richness of the upper storeys is well brought out and great relief given to the eye by the massive simplicity of the basement. The storey above the basement, in which are the principal rooms, depends for its character, as is indeed almost essential to the style, mainly upon the richness of its fenestration; but the upper storey owes its great effect to the more novel feature of intercalating between the windows a series of thirty-three niches, in each of which is an excellently carved statue of one of the sovereigns of England, commencing with the Conqueror—the Queens Elizabeth and Victoria occupying, however, posts of honour on either side of the grand entrance. This entrance porch,—with the florid oriel, nearly 40 feet high and 17 feet across over it, the flanking turrets and sculptured niches,—is a very effective feature in the composition. The tower, modelled upon that of the Vecchio Palace at Florence, is judiciously kept simpler in decoration than the body of the building. Altogether, the façade is alike ornate, picturesque, and imposing. The site occupied by the building is shallow compared with its length, and very irregular in outline, a circumstance of which the architects have availed themselves to produce some pleasing diversities of outline, permissible even in Italian Gothic: symmetry was, of course, out of the question.

The interior is occupied by the municipal offices, and is divided into three distinct portions: the council chamber, 40 feet square, and connected offices at one end; the borough court, a fine room, 53 feet by 37, at the other; the Mayor's rooms occupying the centre. These several rooms are of goodly proportions and rich in sculpture, carving, and other decoration; but there is no great room for meetings and music as in most other town halls, Bradford already possessing in St. George's Hall a room capable of holding 4,000 persons, and another great room for public purposes in the Exchange. A grand staircase gives access to the several state and public rooms. The tower is employed as a ventilating shaft, and will contain, besides the clock, with its hour bell of 4½ tons, what is said to be the heaviest peal of carillon or chiming bells in Europe, the total weight of the 13 bells amounting to very nearly 18 tons. The new building has cost about 100,000*l.*; the site about 30,000*l.*

Turning from the "shoddy" to the "black country," we find that at Bilston a town hall, free library, and various municipal offices have been erected under the title of the New Public Buildings, but of a much less pretentious character than those just described. The building, designed by Messrs. Bidlake and Fleeming, is of brick, stone-faced; Italian in style, and has cost a little over 5,000*l.* for its construction; the Free Library, 1,500*l.* more. The great hall on the first floor is 72 feet by 43, and has a tolerably capacious orchestra. At Wrexham a new Town Hall and Corn Exchange has been opened. The old Yorkshire

Hall has served as the basis of the present building, which owes its latest shape to the architectural skill of Messrs. Holden, of Manchester. Warrington has transformed Bank Hall, late the residence of Colonel Wilson-Patten, into a town hall, the grounds in which it stands being converted into a public park, at a cost in all of something over 20,000*l.* The great hall will accommodate an audience of 1,500 persons. At Wirksworth a new town hall, modelled on the mediæval type, has been constructed from the designs of Mr. Bradley, of Liverpool, at a cost of about 7,000*l.* At Wisbech a new town hall has been built on the site of the old one, but on a larger scale, from the designs of Messrs. Mumford and Townsend. At Barnstaple a town hall and municipal offices have been erected at a considerable cost, close to the bridge and facing the river. The building, which is early domestic Gothic in style, has a front 120 feet long, of Bridgewater brick and Bath stone dressings, and a tower at the west end. The great room is 50 feet long, 25 wide, and 50 high. Lowestoft Public Hall and Library is an Italian building of white brick with Bath stone dressings, designed by Mr. W. O. Chambers, and erected at a cost of about 4,000*l.*

Corn Exchanges have been built at—Doncaster, the façade classic in style, of two orders; the interior a handsome and well-lighted room, 92 feet long, 84 wide, and 63 high, with connected offices; architect, Mr. Watkin, of Lincoln: at Bedford, not yet finished, and elsewhere.

At both Liverpool and Manchester large, well-arranged, and very completely fitted wholesale Fish Markets have been constructed with a view to ensuring for those great towns a more regular and constant supply. A capacious general Fish Market has also been built at a considerable expense at Oldham. A new covered Market House has been erected by the Corporation of Bradford, at a cost of about 35,000*l.*, which is said to be very complete in its arrangements, but which it is intended to extend at a future time at a further estimated cost of 10,000*l.* At Whitchurch a spacious Gothic building has been erected, from the designs of Mr. Stringer, of Nantwich, which comprises rooms for the Local Board, a Corn Exchange, and a general market in the rear. A Cattle Market has been constructed at Northampton, with all necessary appliances, on a scale sufficiently ample to accommodate 5,280 sheep, nearly 2,000 cattle, 500 pigs, and a proportionate number of horses. One on a smaller scale, but complete in its way, has been constructed at Windsor. The Foreign Cattle Market at Deptford, constructed by the Corporation of London at a total cost of about 250,000*l.*, and described in last year's "Companion," has been closed, owing to alterations in the Orders of the Privy Council respecting the admission of foreign cattle into London. The civic corporation has been equally unfortunate in its management of the Columbia Market, made over to it by the munificent founder, Lady Burdett Coutts.

We are glad to report that those admirable institutions, Convalescent Hospitals, are steadily making way. One on an

important scale has just been completed at Woolton, near Liverpool, the necessary funds having been furnished from the surplus of the Liverpool contribution to the fund for relieving the distress caused by the cotton famine of 1862. An addition to the original plan has been made in the shape of a spacious hall for holding religious services, social gatherings, lectures, &c., which has been built by means of penny subscriptions collected among the working people of south-west Lancashire as a testimonial to Mr. Gladstone, and named the Gladstone Hall. Croquet and pleasure grounds have also been provided. The Birmingham Sanatorium has been erected at a cost of about 14,000*l.* at Blackwell, near Bromsgrove, a healthy and pleasant situation. The Convalescent Home at Saltburn-by-the-Sea has been built and will be maintained at the cost of the Pease family of Darlington; it is intended primarily, for the sick and injured among their workpeople.

No less praiseworthy are the Cottage Hospitals which are fast spreading in all parts of the country. Besides the very pretty Savernake Hospital, noticed in our last as in progress, and the North Cambridgeshire Hospital, Wisbech, which owes so much to the munificence of Miss Southwell, cottage hospitals have been opened at—Harrow, a cheerful-looking and homely house, and carefully fitted up; at Ditchingham (a country rather than a cottage hospital, however); at Moreton-in-the-Marsh; at Paulton, Somerset; at Ledbury, Herefordshire; at Longton, Staffordshire, and in a great many other places.

A magnificent Lunatic Asylum for middle-class patients, is being erected at the cost of Mr. Thos. Holloway on St. Anne's Heath, near the Virginia Water station of the Wokingham branch of the London and South Western Railway. It will be a Gothic building, 640 feet long and 250 feet deep, and be surrounded with 25 acres of grounds. The Asylum will, it is estimated, cost 100,000*l.*, and accommodate about 400 patients of both sexes. Mr. Holloway, it is announced, has decided to build two other middle-class hospitals in the neighbourhood of London, one for imbeciles, the other for convalescents, at a further cost of 150,000*l.*, and is in consultation with leading medical and sanitary authorities as to the most advisable dimensions and arrangements, in order to render them the most perfect institutions of their class yet constructed. At Camberwell a parochial infirmary of large size and some architectural pretension has been erected from the designs of Mr. W. S. Cross, at a cost of over 30,000*l.*; it will accommodate 300 patients. A Hospital for Sick Children has been completed at Pendlebury, Manchester, from the designs of Messrs. Pennington and Bridgen, at a cost of about 20,000*l.*; and several other institutions of this class have been opened or are in progress in different parts of the country.

5. Buildings connected with Education, Art, &c.

The chief work of the year at Oxford is the additional building at New College, a structure extending along Holywell-street a length of 177 feet, with an elevation of 62 feet. The new build-

ing is situated to the north of the old buildings, and will be a handsome addition to the rich architecture of the City of Colleges. In general character the new building assimilates to the still existing buildings of Bishop Wykeham; is of stone, and like all Sir Gilbert Scott's work, carefully elaborated and admirably finished; but erring, possibly, in a certain tameness of general effect, though this may disappear when the gatehouse, which will be the leading feature of the façade, is completed. This is to be followed by other extensions. At St. Mary's Hall, the chapel has been partially rebuilt, and wholly remodelled. A magnificent new chapel is in course of erection at Keble College, from the designs of Mr. Butterfield, and at the cost of Mr. W. Gibbs, who has appropriated a sum of 30,000*l.* to its worthy completion. Other works of more or less importance are in progress, but the unfortunate New Schools, of which so much has been said, seem to be at a dead lock.

At Cambridge the most important work has been the virtual completion of the restorations and additions to Jesus College by Mr. A. Waterhouse, a work of great extent and cost, and which is generally considered to have been successfully carried out. Sir Gilbert Scott's additions to King's College are also completed or nearly so, and, though less striking in character than those at Jesus College, are very chaste in style and finish.

A new south wing has been added to University College, London; it is of course classic in style, in accordance with the body of the building, but somewhat less formal in outline, and more ornate in the details. Near it, in Grafton-street East, a Gothic building of brick and stone, has been erected from the designs of Mr. C. Clarke, for Dr. Williams's Library, of old located in Redcross-street, City, and famous for its large and rare collection of theological books and portraits of old divines.

At Bradford a larger and more commodious Grammar School has been erected on the site of the old Grammar School, and the institution starts afresh on a new model. The increasing success of the Marlborough School, which now numbers 700 scholars, has rendered it necessary to build, during the past year, two new masters' houses, affording accommodation for 90 boarders. At Rugby, the old chapel has been rebuilt on a more extended scale from the designs of Mr. Butterfield, and various other alterations effected. A chapel has also been added to Reading School, in harmony with the school buildings, and by the same architect, Mr. A. Waterhouse. King Edward the Sixth's Grammar School, Southampton, has been almost entirely rebuilt, from the designs of Mr. R. Critchlow, of Southampton, with great benefit to the health and comfort of masters and boys, as well as to the architectural character of the building. St. Chad's College, Denstone, Staffordshire, a middle class Church of England collegiate school, modelled on that at Hurstpierpoint, Sussex, and of which we gave some account in a previous volume, has been formally opened. The building is early Collegiate in style, of a somewhat stern type, and will afford accommodation for 400 boys; the

architects were Messrs. Slater and Carpenter. The first section of Owen's College, Manchester, a Gothic building designed by Mr. A. Waterhouse, and noticed in a previous volume, has been opened. On the present occasion it will be enough to record that the first stone has been laid, and the building commenced of the new Merchant Taylors' School on the site of a portion of the old Charterhouse School. The more modern parts of the Charterhouse School will be retained as class rooms. The new building, designed by Mr. E. I'Anson, will be of red brick and Portland stone, Collegiate Gothic in style, and will cost, with the adaptation of the old buildings, about 40,000*l*. The Company paid 90,000*l*. to the Governors of the Charterhouse for the ground.

The London School Board has got through its preliminary labours and settled down into its regular work. Having divided the metropolis into some 459 blocks, the Board was able to ascertain that there was a deficiency of school accommodation for over 100,000 children, to determine the distribution of the deficiency, and to meet the necessity as far as practicable by opening a large number of temporary schools. This was immediately followed by making provision for permanent schools in those places where schools were most needed. The first new Board School was opened on July 12th, 1873, in one of the most wretched parts of Whitechapel. This provided accommodation for 396 boys, as many girls, and 480 infants; a larger school was opened a fortnight later at Bethnal Green, and two have since been opened at Deptford. In all 73 will be built, and several of them are approaching completion. Various architects have received commissions, and there is a considerable diversity in the accepted designs. Future schools will probably be designed by Mr. Rolson, the architect of the Board. Thus far the exteriors of the new schools may be said to be Gothic in character; but very little has been expended upon ornament, everything being rigidly sacrificed to "convenience and suitableness." We are not sure that some of them will not be found to be "when unadorned adorned the most." A chaste simplicity of style seems most conformable to a place for primary education. The schools are mostly two storeys high, the ground floor being appropriated to infants, the first and second floors to boys and girls respectively —the girls mostly having the first floor, but sometimes being sent up to the second. Those we have seen, and there can be no doubt that it will be so with those remaining to be erected, are well built, have lofty, amply lighted, and well ventilated rooms —points of the utmost consequence to teachers as well as children —are well furnished in the matter of school appliances and fittings, and care has been taken to obtain playgrounds, and to provide efficient sanitary arrangements. The building committee must have got through an amazing amount of work, and they have performed their duties with great judgment as well as zeal.

Special schools, like the Baptist Theological College, Rusholme, a spacious Gothic building of white bricks and terra cotta,

designed by Mr. H. Pinchbeck, of Manchester; and the Northern Congregational College, at Silcoates near Wakefield, a red brick Gothic building, designed by Mr. J. Shaw, of Leeds, have been completed, or are approaching completion in various places, but scarcely call for particular notice here.

In the last volume of the "Companion" we gave an account of the new City of London Library. It was formally opened a few days before the publication of that account, and has fully realized the anticipations formed of it. Large numbers of persons have availed themselves of the facilities afforded for examining its literary and antiquarian treasures. Besides the civic monuments and manuscripts it contains 50,000 volumes of printed books; an interesting collection of London antiquities and miscellaneous "curiosities;" and the fine reading-room and museum serve as stately reception rooms at the great civic banquets. Altogether the building does honour to the City, and credit to the skill and taste of the architect, Mr. Horace Jones.

The Grosvenor Club for Working Men, George Street, Pimlico, the first of the kind in London, has been opened under the auspices of the Marquis of Westminster, who gave the site (in trust to the parish at a nominal rent so as to secure its retention for its original purpose), and subscribed largely towards the cost of the building. The club-house, a tall Gothic building of brick and stone, designed by Mr. Withers, has the ground floor appropriated to church and mission purposes; a spacious club-room, with reading and bagatelle rooms on the first floor, and large class-rooms in the upper storey, with a good kitchen and provision for mid-day dinners. The building has cost about 6,000*l*.

An Athenæum, with a commodious lecture and music-hall, reading, and class-rooms, has been erected in the Camden Road, from the designs of Mr. F. Meeson. In the Holloway Road, a short distance north of the Camden Road, a larger structure, Holloway Hall, and possessing more architectural character, has been erected from the designs of Mr. G. Truefitt. The front is of brick with stone dressings, and some good carved work. The great hall is 112 feet long and 47 wide, and below it is a room of equal size; while in the front of the building there are committee rooms, reading and billiard rooms. A lecture and music-hall, capable of comfortably seating 500 persons has been erected at Bexley Heath, from the designs of Mr. J. Hewitt; and another is in course of erection in the Brockley Road, Lewisham. In the provinces buildings of a similar kind have been erected at Southampton, and in various other places.

Whilst some of the recently built London theatres have been closed another new one has been opened, this time at the extreme north-west of the metropolis. The Alexandra Theatre, Park Street, Camden Town, makes, externally, no architectural pretension. The building itself is hidden behind mean shops and small houses, and the entrance is merely one of the shops adapted to the purpose, whence a corridor leads to the theatre. The interior is light, fairly ventilated, and capacious, the pit

being, it is said, capable of seating 1,000 persons; but the form and fittings are of the ordinary character. The architect was Mr. J. T. Robinson.

The destruction of the Alexandra Palace a fortnight after it was opened renders it unnecessary to say anything further respecting that unfortunate building; but this catastrophe is another warning of the danger that threatens many of our large places of public resort. Happily, when the Alexandra Palace caught fire there were comparatively few people within it. At the same hour on the previous Monday it was so crowded that free movement was difficult anywhere, whilst the staircases were almost impassable. What would have been the consequence of a fire breaking out then, the flames sweeping through the building as though it had been contrived to burn? At the inquest the architect stated with ingenuous frankness, "Timber was so largely used that when the building once caught fire there was very little chance." But swiftly as the flames spread, still swifter destruction is conceivable: "Had I wanted to set fire to the palace," said the same authority, "I should not have gone to the dome." The Alexandra Palace is to be rebuilt, we are told, on an improved plan, careful provision being made against fire, and ample means of egress furnished. But events like this force us to ask what thought is taken against fire or panic in our London theatres and music rooms? In very many of these not only is "timber largely used," but it is arranged as though to burn most readily; whilst the buildings, instead of standing in a free open space, are surrounded by closely packed masses of combustible houses, and the egress is too often by narrow and tortuous passages and ill-planned staircases.

6. Street Architecture.

The new buildings which have been called into existence by the construction of the Holborn Viaduct and the City Improvements in connection with it exhibit as curious a variety in style and character as the new buildings in the older streets. When this progressive regeneration of London shall have emerged from its embryo stage the new London will serve as a museum of architectural masks of almost every century, gathered from almost every corner of Europe. In their juxtaposition they seem at present somewhat odd, let us hope that time and circumstances will weld them into some sort of harmony, or that we may, with the variety, be providing for our descendants, if not a feast of beauty for the eye, plenty of that picturesqueness about which the present generation talks so much and knows so little.

In immediate contiguity with the Holborn Viaduct, the most important building completed is the great drapery warehouse of Messrs. Meeking, the front of which will extend, when the western wing is added, a length of 200 feet, with a height in the centre of 60 feet, and the wings of 50 feet. The new station of the London, Chatham, and Dover Railway, is nearly completed;

the City Temple already noticed, and some extensive business premises close by are making marked progress. In Farringdon Street, the Congregational Memorial Hall has reached its third storey, and appears as though it would be a more effective building than the architect's elevation promised. At the Ludgate end of Farringdon Street, and by Ludgate Circus, a great many new buildings have been erected. One of the most noticeable is Cook's Tourist Office, which has a frontage of 130 feet with a height of 71, is faced with Portland stone, with granite piers and bases, and has a good deal of bold carving—altogether a very showy but not very refined building. Adjoining it is a plainer brick building designed by Messrs. Woodzell and Colcutt in much better taste, and which is in the upper part a really good application of Gothic to a London shop and warehouse front: the doorways might, however, with advantage have been less bald and meagre, and the shop window is by no means attractive. The range of shops at the corner of the Old Bailey is not to be complained of in this respect: there is decoration enough and to spare, but the whole is crude and vulgar. Better, because quieter, though not altogether satisfactory is the house on the opposite side of the way, built from the designs of Mr. Blashill, for Mr. Trübner, the publisher, on the site of the Milton Club. It has a lofty façade of brick and Portland stone, with boldly carved elephants' heads for capitals, which serve to emphasise the semi-oriental character of the design as well as to indicate the nature of an important branch of the business. The windows above are round arched within obtuse pointed dripstones. The interior is spacious, judiciously arranged, and handsomely fitted. Near this is a range of shops and offices noteworthy for good arrangement and finish without undue expenditure of ornament or materials. Mr. Treloar's new premises near the railway bridge also claim a word of notice. In the new street, west of New Bridge Street, and partly on the site of the old Bridewell, several new buildings are rising, one of which, the City Mission House, a substantial stone edifice, appears likely to be of some importance. At the corner of the Thames Embankment in New Bridge Street, a vast hotel some five or six storeys high and of great length is fast rising, and will of necessity form a prominent object. On the opposite side, in the new Queen Victoria Street, several large warehouses, and one or two buildings of more general interest are in course of construction. One of the most remarkable will be the *Times* advertisement office, a spacious structure of red brick with deep mouldings and dressings of cut yellow brick: the whole has a novel but solid aspect, and promises to be when finished an excellent building of its class. About Queen Street the new buildings become still more numerous, and several of them are above the average as examples of street architecture. Some are substantial stone buildings with a good deal of carving, others are of brick with dressings of terra cotta. The Civil Service Store, at the corner of Benet's Hill, designed by Mr. Saunders, is a lofty semi-classic

Italian structure with columns of the Corinthian order. Towards the Mansion House several other large shops and offices are building, and altogether it is evident that Queen Victoria Street will shortly be one of the stateliest streets in London.

Few of the new City offices have attracted more notice than the New Zealand Chambers, in Leadenhall Street, designed by Mr. R. Norman Shaw, A.R.A. It is a revival of the City architecture with which we are familiar in old engravings, and of which an example might have been seen but lately in Bishopsgate Street. At first sight it is very taking from the associations it calls forth of the days of Elizabeth and James. The Leadenhall front has four boldly projecting red bricks piers which are carried up to the cornice, the spaces between them being filled with three tall bay windows, plain below and increasing in ornament to the third storey, above which is an attic with a continuous or workshop window, rising, however, into dormers over the bays. The carving of the cornice is elaborately decorated with the well-known Jacobean scroll ornaments. The effect is striking and piquant, but it is at best a revival, and that of a low style of art, the imitation being carried even to the using of small panes of glass throughout. If such a building had come down from the beginning of the 17th century it would have been prized as a picturesque example of the art of the time, now it merely adds another to the motley of our recent City architecture: but it will doubtless find copyists.

If a visit be made to this building, it might be extended to Mark Lane, where, on the site of Allhallows-Staining Church, one of the City churches pulled down a year or two back, has been erected a large range of offices, designed by Mr. Roper, of a semi-classic character, that may be cited as fairly representing substantial but unpretending City prosperity. Other offices in St. Michael's Alley, Cornhill, Cannon Street, Fore Street, and other parts of the City might be referred to, but those already mentioned will be sufficient for our purpose.

The West End need not detain us long. The National Bank, in Piccadilly, with its weak stretched-out columns, is, despite the neat finish of many of the details, the feeblest design we remember to have seen from the pencil of Mr. Gibson. Nor is the bookseller's house on the opposite side of the way, with its trade mosaics and rilievi altogether satisfactory, though there is something refreshing in its novelty; and the architects, Messrs. George and Vaughan, deserve credit for their bold departure from precedent. The new Junior United Service Club, at the corner of Waterloo Place and Pall Mall, is mainly a remodelling of an existing building, but it has been skilfully accomplished by Mr. R. Plumbe, who has made the most of the means at his disposal. St. Stephen's Club, at the corner of the Thames Embankment, is a pretentious French Renaissance building, strangely out of keeping with the Houses of Parliament, immediately opposite the Clock Tower of which it stands: it is to be finished in 1874. The Provident Institution in St. Martin's

Lane; a warehouse and offices in Wellington Street; the Gaiety Buildings in the Strand; shops and offices in Oxford Street; warehouses and offices in the Westminster Road and Southwark Street, and various others might be mentioned as having more or less of an architectural character.

In the country again we have but to glance at the great commercial and manufacturing towns to see in the ordinary street architecture as in the public and corporate buildings a rate of progress fully sustaining comparison with that of the metropolis. In Liverpool, besides the magnificent Central Railway Station and Hotel, there are smart shops and handsome offices fast rising, and in addition the ever-expanding dock extensions. Manchester, besides its Town Hall, has still new warehouses, club-houses and shops. At Bradford, besides the various works already noticed, and some costly new warehouses, new streets are being opened, and old ones widened and improved, and Messrs. Lockwood and Mawson are constructing a bank which is to eclipse in splendour anything of the kind in the town. At Newcastle, Mr. J. Gibson has built a branch of the National Provincial Bank, which is far superior to that he built for the Piccadilly branch in London. Birmingham is busy with alterations in the neighbourhood of New Street, and has various buildings on hand, the chief of all being, however, the grand Mason College of Science. At Bristol several new warehouses, offices, and shops have been built, and others are in progress, some noteworthy for architectural effect, others for costly materials. We might pass on to Leeds, Bury, Norwich, Reading, and other places, but further details would probably be tedious, and they are not required to illustrate the extent and character of the progress that is being made.

7. Bridges, Docks, &c.

Passing by the vast but still incomplete operations at the Government Dockyards, Portsmouth, Chatham, &c., the great work of the year has been the completion of the breakwater which forms Holyhead Harbour. The works comprise a northern breakwater carried out for nearly a mile and a half (7,860 feet) from the shore, and an eastern breakwater 2,000 feet long, together forming a harbour of 267 acres extent, and sheltering a roadstead of 400 acres of deep water. The packet pier for the Irish postal service is 1,500 feet long. The breakwater is built on a rubble mound, formed of quartz rock quarried from Holyhead Mountain, which is nowhere less than 250 feet wide at the level of low-water, and in 50 feet depth of water is 400 feet wide at the base. The solid wall of the breakwater is built of massive blocks of Holyhead stone, and is carried up to a height of 38 feet above low-water, forming a fine promenade. The head of the breakwater is a massive structure 150 feet long and 50 feet wide; on it is a lighthouse. The harbour was formally opened by the Prince of Wales, August 19th, 1873, but it has in fact served for the last twenty years as a harbour of refuge,

steadily increasing in capacity until now on an average 3,500 vessels a year seek refuge within it. The entire cost of the works has been about 1,500,000*l*. The original plans were made in 1847 by Mr. J. M. Rendel, who was engineer-in-chief till his death at the close of 1856, when he was succeeded by Mr. (now Sir John) Hawksley, by whom the works, somewhat modified and extended in plan, have been brought to a conclusion.

Turning to commercial enterprise, we may notice that in the dock accommodation at the oldest of our ports, Bristol, extensive improvements have been made, including a new junction lock between the floating harbour and Cumberland Basin. The works were executed under the superintendence of Mr. T. Howard, C.E., at a cost of about 314,000*l*. At the newest and most remarkable of our ports, Barrow-in-Furness, a new dock, the Buccleuch, of 33 acres, has been opened, and another, the Ramsden, of 200 acres, is in progress, of sufficient depth to admit the largest sea-going steamers at any state of the tide. And just as, in the Furness district, the working of hæmatite ore is producing this marvellous change, so is the Cleveland ore bringing about even greater changes, not only giving rise to new towns in the Cleveland district, but causing the opening of new railways and the construction of new docks. Among the places which seem likely to rise into importance, in this connection, is Lofthouse, not far from the mouth of the Tees, where extensive works are designed. At Grimsby large new docks are in course of construction. At Whitby, a new pier is to be built, and quay and harbour extension are proposed.

Dock extensions, on a considerable scale, are in progress at Southampton. The works include a new quay, of 1,500 feet, along the Itchin, which is to form one side of a new dock of 30 acres. New docks, of great size, are projected at Sharpness, on the Bristol Channel, at the entrance of the Berkeley and Gloucester Canal, to afford to Gloucester facilities similar to those which the new Portishead docks are expected to furnish to Bristol. At Harwich it is proposed to inclose and reclaim about 100 acres of the foreshore of the estuary of the Stour for the construction of an inner harbour, docks, wharves, and warehouses. Additional large docks are proposed for Cardiff, at an estimated cost of 750,000*l*. But the most remarkable dock extension is that for which the Corporation of Liverpool obtained an Act of Parliament last session. By this Act, they are empowered to construct twelve new docks in Liverpool, six at the north end of the port and six (but of somewhat smaller size) at the south end. They are also bound to construct, simultaneously with these, a new dock at Birkenhead, at a cost of about 500,000*l*. —the total outlay, estimated originally at something under four millions, being now stated, by the Chairman of the Dock Board, as likely to reach six millions sterling.

New landing and promenade piers have been opened at Ilfracombe, Devon; at Cleethorpes, on the Lancashise coast, an iron structure, 1,200 feet long; at Redcar, a substantial structure, 5,200

feet long, with a landing-stage available at all states of the tide; at Eastham, Cheshire, 100 feet long; at Herne Bay, Kent, a light iron structure, 450 feet long, built on the lines of the old pier for which, however, it is but a sorry substitute, as that stretched into the sea for more than half a mile farther.

The Albert Suspension Bridge crossing the Thames from the Chelsea Embankment to Albert Road, Battersea Park, has been opened. It is the longest of the Thames suspension bridges, and the engineer, Mr. R. M. Ordish, claims for it the superiority in rigidity, and economy of cost. It consists of three spans, the central 453 feet between the piers, the side spans each 152 feet between the piers and the abutments; the entire length of the bridge is 790 feet, the width 40 feet. The piers are cast iron cylinders, filled with solid concrete, 22 feet in diameter below, 16 feet above low-water level. From these piers rise towers of light open iron work to a height of about 130 feet above high water; the opposite towers being connected by a light open arch, the centre of which is nearly 60 feet above the roadway. The platform of the bridge is supported by iron chains which are carried from the abutments over the towers somewhat below the summits, and kept straight by auxiliary curved chains suspended above them: the two chains are connected by vertical rods, and great rigidity is ensured by the combination. From the river, the bridge has a light and not inelegant appearance; from the Embankment it is less pleasing, and the approach from the roadway is inconveniently steep.

Another bridge has been constructed by a private company, about two miles higher up the Thames, from Wandsworth to Fulham. This is an iron bridge of lattice girders, 12 feet deep, carried on iron cylinder piers, each 7½ feet in diameter. It has three spans of 133 feet each in the centre and two shore spans, each of 113 feet. The abutment piers are of brick and stone. The width of the roadway is about 30 feet. The bridge has cost about 15,000*l.*; the approaches about 30,000*l.* more. It affords a ready and convenient communication between Walham Green, Fulham, and York Road, Wandsworth, being situated about midway between Battersea and Putney Bridges. The bridge itself is not particularly handsome. Utility rather than ornament has been aimed at, and appears to have been achieved. The engineer was Mr. J. H. Tolmé.

In the country, we may notice that among others, a handsome new bridge of a single span has been built at the bottom of the Briggate, Leeds, in place of the well-known awkward old structure which there crossed the Aire; and that an iron girder bridge of three spans, supported on iron cylinder piers, has been carried across the Nene at Peterborough.

JAMES THORNE.

HOSPITAL SUNDAY IN LONDON IN 1873.

If any fresh illustration were needed of the advantages of possessing a central authority in our great cities, capable not only of controlling but of suggesting, of initiating new movements for the public good as well as of maintaining in all their vigour and usefulness existing institutions, it has been supplied in the most marked manner during the past year by the application to the Metropolis, under the auspices of the Lord Mayor, of the Hospital Sunday system, which had been so successfully adopted in some of the large provincial towns. By his official position, attained in London at least—whatever may be the case in the country where political or religious feeling sometimes runs high—by personal integrity and the consequent esteem and confidence of his fellow-citizens, the head of the civic body is at once enabled to support and direct any such scheme as this, which, but for his countenance and for the entire absence of party spirit or cliquism resulting from its origin in the great public hall in the City, might collapse, or at any rate meet with but half-hearted support. This is especially important in a matter like the Hospital Sunday system, where the co-operation of men of all creeds is essential, and where, as a natural result, there is always some risk lest the *odium theologicum* should find its way into the discussions and mar the harmony of the proceedings. In London this danger has been happily avoided, and with the results of the work before us in all their magnitude, upwards of 25,000*l.* having been collected at a cost of considerably less than 1,000*l.*, or not more than 2½ per cent. on the receipts, much of which would probably have been lost to the charities if this organization had not been set on foot, we have good reason to believe that the year 1873 will attain an honourable distinction in the annals of English philanthropy, while the connection of the scheme with the mayoralty of Sir Sydney Waterlow will add not a little to the pleasurable remembrances of one of the most popular years in the history of the Corporation.

In order to supply some permanent record of the work accomplished, we propose briefly to trace the origin and progress of the movement and then to present an analysis, necessarily brief, of the report and balance-sheet which have recently been published. The first meeting at which the question of establishing a Hospital Sunday in London, was definitely mooted, was held at the London Tavern, on the 21st of November, 1872, when, under the Chairmanship of Mr. R. B. Martin, it was resolved at once to appoint a committee to discuss the subject. The experience of the provincial towns, and notably of Manchester, Birmingham, and Leeds was described, and Mr. Martin stated that the fear lest simultaneous collections on a particular day would reduce the ordinary receipts of the Hospitals had been proved to be groundless. From the London Tavern, the Com-

mittee moved to the Mansion House, where its meetings have ever since been held, and where, on the 11th of December, the Lord Mayor in the chair, it was resolved to invite the attendance of the representatives of the various religious bodies to a Conference on the 16th of January. This meeting accordingly took place and was largely attended, while letters of approval and sympathy were read from the Bishops of London, Winchester, and Rochester, and a similar expression from the Archbishop of Canterbury was conveyed to the meeting by the Lord Mayor. After the passing of a resolution affirming the desirability of extending the movement to the Metropolis, a representative council, consisting of no less than twenty-five clerical and twenty-five lay members, the balance of clerics and laymen being always maintained, was resolved upon as the Standing Committee to make the arrangements year by year. This Council was further empowered to appoint a Committee of Distribution, consisting of members unconnected with hospitals, whose decision should be final; and the Lord Mayor was elected permanent President and Treasurer of the Fund, with power to convene the annual meeting. The concluding resolutions containing the decision of the meeting as to the mode of distributing the money, were as follows:—

> "That the system of distribution be based upon the last three years' expenditure of each Institution, after deducting the income derived from endowments, realized property, and legacies exceeding 100*l*."
>
> "That no Institution be admitted to participate in the distribution of the Fund, if the Committee of Distribution find the cost of its management exceed a reasonable percentage of the whole current expenditure."

The Central Council appointed on this occasion included representatives of the various sections of society and members of almost all the numerous religious denominations, which in this case, for once at least, were invited to forget their differences, to remember their common origin, and to act upon the dictates of one of the fundamental principles of all religions, Christian or Jewish, Greek, Roman, or Anglican, established, or voluntary—charity. Thus, in the clerical division we find the names of Bishops of the English and the Roman Churches, the Archimandrite of the Greek Church, the Chief Rabbi, the patriarchs of the various Nonconformist communities—Bishops without the style—and a host of Priests, Deacons, and Ministers, all more or less known to fame from their connection with various works of benevolence and usefulness in the great city. In the lay division of the council, peer and commoner, city and country, the professional man and the merchant, the man of science and the philanthropist, nay, even the ladies of London were to be found, and thus fairly and honourably constituted the managing body commenced its arduous task. Of the nature of the work before it, some idea may be formed when we state

that the lists of churches and chapels to the incumbents of which it was resolved that application should be made, included no less than 2,500 names, taken from bodies as various in the numerical strength of their members as in the teaching of their clergy. Thus there were the Church of England, the Congregationalists, the Free Christians, the Society of Friends, the German Lutherans, the Greek Church, the Countess of Huntingdon's Connexion, the Jews, the Latter Day Saints, the Methodists' New Connexion, the Primitive Methodists, the United Methodists, the Welsh Calvinistic Methodists, Methodist Mission Churches, Moravians, the Church of Scotland, English Presbyterians, United Presbyterians, Roman Catholics, Unitarians, Wesleyan Methodists, Plymouth Brethren, and a miscellaneous class of congregations whose leaders are not to be included under any special sect, or who held their services at some other than their usual places of meeting. The total number of congregations in these preliminary lists was almost equally divided between the Established Church and the other bodies, and so too we find the same proportion maintained in the list of collections actually made. The next task before the Sub-Committee when the day for holding the collections (the 15th of June) had been decided on, was to issue appeals in all directions, preparatory to the publication of a list of those of the clergy and ministers who decided to support the movement. This was accordingly done, even the suburban parishes to the full extent of the area within which it was believed the benefits of the London Hospitals were extended, being included in the applications. As a matter of fact, a little less than half the appeals were successful, collections being held for the object in 1,056 places of worship. Of the services on this memorable occasion, the newspapers, without exception, furnished lengthened accounts on the following morning, the grand service at St. Paul's Cathedral, attended by the Prince and Princess of Wales, the Lord Mayor and Corporation, and other eminent persons being recorded on one page, while on another the plea, no less forcible and no less heartily responded to, of the Mission Curate, was duly noticed. Even the music of the services was chosen in full accord with the leading idea which was presented to every mind, and it is not too much to say, that the divine beauty of charity never met with a more striking illustration.

Turning to the results of the collections, we find that the highest average was that of the Jews, the Established Church coming next in order, but then it must not be forgotten that any average arrived at by dividing the receipts from each body by the number of places at which collections were made, is scarcely satisfactory, as in the case of the Greek Church for instance, it would give 203*l.*, there being only one church of that faith where a sermon was preached. The following table will, however, be interesting as showing the amount contributed by each body, and the average amount contributed at each place of worship where the collection was made :—

		Amount.	Average.
		£ s. d.	£ s. d.
574	Church of England	17,902 5 10	31 3 9
70	Baptist..	941 7 3	13 8 9
109	Congregationalist	2,073 6 2	19 0 5
2	Free Christian	45 2 9	22 11 4
12	Friends, Society of	213 0 9	17 9 0
6	German Lutheran	84 19 0	14 3 2
1	Greek Church	203 17 3	
2	Countess of Huntingdon's..	25 0 2	12 10 1
21	Jews	1,324 9 11	63 1 5
1	Latter Day Saints	0 8 0	
54	Methodists of various forms	150 15 6	2 15 10
9	,, Missions	11 1 7	1 4 7
1	Moravian	20 3 0	
4	Church of Scotland	68 0 11	17 0 2
15	English Presbyterian	452 8 0	30 3 2
5	United Presbyterians	111 11 0	22 15 6
68	Roman Catholic	602 15 11	8 17 3
5	Swedenborgian	55 3 3	11 0 7
11	Unitarian	188 18 9	17 3 6
8	Unsectarian and Secular	22 17 10	2 17 2
74	Wesleyan Methodist..	898 16 3	12 2 11
2	Plymouth Brethren..	2 11 8	1 5 10
15	Various	332 0 10	22 2 8
1,056		£25,743 1 4	
	In addition to the above, the following sums were received—		
	From 126 bodies of workmen..	244 7 6	
	,, 88 schools	112 11 8	
	Donations	1,489 18 8	
	Giving a total receipt of	£27,589 19 2	

The distribution of this sum was entrusted to a committee, consisting of Sir Sydney Waterlow, Sir Anthony de Rothschild, Bart., Messrs. S. Morley, M.P., Thomson Hankey, W. McArthur, M.P., W. H. Smith, M.P., Lord Mahon, and Mr Jervoise Smith, whose first step was to advertise for copies of the reports and accounts of each institution for the previous three years. These reports were then analysed, and the receipts divided under two heads: 1. Income derived from subscriptions, donations, and collections. 2. Income from realised property and fixed payments by patients or others. The expenditure was also analysed in order to distinguish the sums expended on: (1) the relief and maintenance of patients from, (2) the cost of secretarial staff, collectors' poundage, advertising, printing, &c. In other words, the committee endeavoured to ascertain where economy of administration was striven after, as this was one of the primary conditions on which their distribution of the funds was to be based. The examination thus entered upon revealed at once the utter absence of uniformity of arrangement in the manner of keeping the accounts of the various hospitals, which is so great that, to use the words of the report, "it can scarcely be said that any two institutions render them in the same form, and hence the difficulty in making a strictly correct comparison." It is however hoped that one of the indirect, but by no means the

least important, results of the establishment of the Hospital Sunday in London may be to remedy this evil. In the actual distribution of the funds at their disposal the committee state that they were materially influenced by the proportion which the management expenses of each institution bore to the moneys expended on the patients, and also by the amounts received in the three years as compared with the gross expenditure of the same period. Any medical charity with average ordinary receipts in excess of its necessary average current expenditure was not considered to be in very great need of assistance. The net result of these deliberations was the award to the hospitals of the major part of the amount collected, 24,571*l.*, and 2,185*l.* to the dispensaries, a distribution which has called forth considerable criticism on the part of the friends of the latter institutions.

In order to show in detail the institutions which were assisted from the fund the following tables, contributed by the writer of this paper to the "Guardian" newspaper, will be of interest. In the first place we will take the General Hospitals, to which the under-mentioned amounts were allotted:—

	£	s.	d.
Charing Cross	958	6	8
Great Northern	383	6	8
London	3,833	6	8
University	1,150	0	0
Middlesex	1,300	0	0
St. Mary's	1,150	0	0
St. George's..	2,875	0	0
West London	287	10	0
Westminster	1,150	0	0
Royal Free..	766	13	4
Metropolitan Free ..	95	16	8
King's College	1,150	0	0
	£16,100	0	0

The following is a statement of the amounts given to the Special Hospitals:—

	£	s.	d.
Belgrave, for Children ..	162	18	4
British, for Skin Diseases ..	47	18	4
British Lying-In	38	6	8
Bromley Cottage	38	6	8
Cancer, Brompton	239	11	8
City of London Lying-In ..	76	13	4
City Orthopœdic	38	6	8
City of London, for Chest Diseases	958	6	8
Dental..	38	6	8
East London (for Children) .	306	10	4
Evelina (for Children) ..	287	13	0
Female Lock	95	16	8
French..	38	6	8
German	287	10	0
General Lying-In	95	16	8
Hospital for Hip Disease in Childhood	19	3	4
Hospital for Throat Disease	191	13	4
Hospital for Skin Disease ..	115	0	0
Hospital for Women (Soho)	143	15	0
Hospital for Women and Children	19	3	4
Hospital for Sick Children (Ormond Street)	575	0	0
Homœopathic..	239	11	8
Male Lock	95	16	8
National, for the Paralyzed and Epileptic	383	6	8
North Eastern, for Children	95	6	8
National, for Consumption (Ventnor)	95	16	8
North London Consumption	383	6	8
Poplar (for Accidents) ..	383	6	8
Queen Charlotte's Lying-In	191	13	4
Royal Orthopœdic	191	13	4
Royal London Ophthalmic ..	383	6	8
Royal South London Ophthalmic	76	13	4
Royal, for Diseases of Chest	383	6	8
S. John and S. Elizabeth (for Women and Children) ..	115	0	0
St. Mark's (for Fistula) ..	287	10	0
St. Peter's (for Stone) ..	38	6	8
Samaritan, Free (for Women and Children)	287	10	0
Seaford and Newhaven Convalescent	76	13	4
Seamen's	766	13	4
Victoria (for Children) ..	95	16	8
Western Ophthalmic ..	57	10	0
Wimbledon Cottage.. ..	28	15	0
	£8,471	13	4

Classifying the foregoing tables, we find that the institutions

for various classes of persons were assisted to the following extent:—

	£	s.	d.
7 for Children	1,542	8	4
1 for French	38	6	8
1 for German	287	10	0
1 for Homœopaths	239	11	8
1 for Seamen	766	13	4
8 for Women	967	18	4
Total	£3,842	8	4

The hospitals for women include four lying-in hospitals, while at two of the remainder children as well as women are treated. The following table shows the sums given to institutions for special diseases or injuries:—

	£	s.	d.
1 Accidents	383	6	8
1 Cancer	239	11	8
1 Chest Disease	1,341	13	4
2 Consumption	479	3	4
3 Convalescent	143	15	0
3 Eye, Diseases of the ..	517	10	0
2 Feet, Diseases of the ..	230	0	0
1 Fistula	287	10	0
2 Lock Hospitals	191	13	4
1 Paralysis and Epilepsy	383	6	8
2 Skin, Diseases of the ..	162	18	4
1 Stone	38	6	8
1 Throat, Diseases of the	191	13	4
1 Teeth, Diseases of the ..	38	6	8
	£4,628	15	0

Two separate distributions were made to the Dispensaries, forty-one in number, the first of a sum of 948*l.* 14*s.* 4*d.*, and the second of 344*l.* 18*s.* 4*d.* out of the balance remaining from the general distribution, making a total award to these institutions of 1,293*l.* 12*s.* 8*d.*, or an average of 31*l.* 11*s.* 0*d.* to each. In addition to the hospitals and dispensaries, ten miscellaneous medical charities received 891*l.* 15*s.* 8*d.*, thus making a grand total of 26,756*l.* 11*s.* 8*d.* expended on the great objects for which the moneys were collected. The whole of the office expenses, including 200*l.* for advertising, 186*l.* for printing and stationery, 67*l.* for postage, 200*l.* to the secretary, 69*l.* to clerks, and 26*l.* to sundries, only amounted to 750*l.* 8*s.* 10*d.*, thus leaving a balance of 196*l.* 11*s.* 5*d.* available for the preliminary expenses of the next year.

This result must, we think, be admitted to be eminently satisfactory, in fact we question whether any fund has ever been more satisfactorily or economically managed. The question raised as to the wisdom of devoting such a small amount to the Dispensaries will doubtless receive attention from the Council before the next appropriation of the funds takes place, but, with this exception, it would be impossible to suggest any improvement in the arrangements, and even that is, of course, an open question. In conclusion, we cannot in justice omit a word of congratulation to the Council, and especially to Sir Sydney Waterlow, on the result of their labours, while praise is also due to Mr. W. H. Ramsay, the Secretary, for the energy he has displayed throughout the proceedings.

THE MUSIC OF THE YEAR 1873.

WHATEVER opinion may be formed by posterity as to the value of the additions made during the past year to the common stock of art work, there can be little doubt that it has been a period of unusual musical activity, whether as regards the composer or the executant. Abroad and at home festivals, in many cases of marked interest, have crowded on each other so rapidly that the critic has scarcely had time to hurry from one town to another to fulfil his by no means easy task, while the number of new works of importance, chiefly in the form of oratorio or cantata, has been far in excess of the average. So again in the formation of new societies there has been a steady increase, England especially being able to boast of the establishment of one series of daily orchestral concerts, and of several orchestral and choral bodies devoted to the practice or performance of high class music. Thus in any case there has been during 1873 more music-making than usual, and such a fact necessarily involves the conclusion that the number of performers and the demand for concerts among the general public are also on the increase.

Looking first at the Musical Festivals of the year England has good cause to feel proud of the success of her efforts. In addition to the time-honoured Festival of the Three Choirs, this year held at Hereford, the still more important Triennial Festival at Birmingham, and the recently established festival at Brighton, we have to chronicle festivals of entirely new foundation at Bristol and Glasgow. At each of these important novelties were produced. The Birmingham Festival was noticeable for the introduction of a new oratorio, *The Light of the World*, from the pen of Mr. Arthur Sullivan, and two cantatas, *Fridolin*, by Signor Randegger, and *The Lord of Burleigh*, by Signor Schira. Several posthumous works by Rossini, heard for the first time, also found a place in the week's programmes, which were throughout directed by Sir Michael Costa. At Hereford the only novelty was Sir Frederick Ouseley's oratorio *Hagar*, but the performance of Handel's *Jephtha* possessed all the attractions of a new work for the provincial audience. At Bristol the music meeting, like that at Birmingham, consisted exclusively of performances in the concert room, instead of being, as at Hereford, partly given in the cathedral, and for this purpose the fine building known as Colston's Hall was well adapted, the erection of galleries and an enlarged orchestra forming the only needful alterations. The organ, so frequently used with good effect in this as in a happily increasing number of our larger towns for weekly recitals, was ready to hand; the choir, consisting of local choristers, had been trained in anticipation of the event by Mr. Stone, and the orchestra was conveyed *en masse* from Manchester by Mr. Charles Hallé, the eminent pianist, who conducted the performances. The novelty of the week was a new oratorio, *St. John the Baptist*, by Mr. G. A. Macfarren, one of the most able of our English composers and

critics. Then, in worthy competition with the South, North Britain has contributed its festivals at Edinburgh and Glasgow. The latter was a revival rather than a new creation, for a festival took place in that city in the year 1860, when Mr. Horsley's *Gideon* was performed with a *cast* which has seldom been equalled and never excelled, including Madame Clara Novello, Madame Sainton-Dolby, Mr. Sims Reeves, and Mr. Weiss. At that date, however, there was scarcely a sufficient public for performances of this class, but now times have changed, and the festival, including an oratorio, or rather sacred cantata, entitled *Jacob*, by Mr. Henry Smart, and a psalm (the 84th) by Mr. Lambeth, a local composer and conductor, has been carried out with spirit and success. The Brighton Festival, which took place in February, although depending for its maintenance on the individual energy of its chief conductor, Herr Kuhe, instead of being supported by a body of guarantors and local committees as at Hereford, Birmingham, Bristol, and Glasgow, is well worthy of note as an endeavour to provide a series of concerts of the highest class. This year the only novelty, a setting of Longfellow's *Evangeline*, by Miss Gabriel, was scarcely deserving of the place of honour. Taking a glance at the whole series of festivals, the chief point which strikes the observer is the continued popularity of the great works of Handel and Mendelssohn, without one or more of which no provincial meeting seems to be regarded as complete, and the performance of which is always regarded as an absolute necessity in order to secure a financial success. New works may be interesting, and of course ought, to a greater or less extent, to find a place in every such scheme if art is to make satisfactory progress, but it is very evident that no novelty can ever hope to exercise the attraction which the *Messiah* and the *Elijah* still exert, whether in London or the country. As regards the new works heard this year, Mr. Macfarren's oratorio will probably live longer than the rest, for Mr. Sullivan's *Light of the World*, able as are many portions of it in regard to their orchestral treatment, is scarcely calculated to endure, or to take its place beside the masterpieces named above. The music suffered, in fact, from its composer having undertaken too much, and having worked in too great haste—a fault not confined to musicians in these days of hasty composition and hurried execution. The general standard of performance at the several festivals was unquestionably good, in fact almost the only flaw in the arrangements was the comparatively worthless character of some of the miscellaneous selections. In all such cases when a good orchestra is available—a result very seldom attained in a country town—it would be well to include one symphony in each programme, while it would also be judicious to follow the excellent example set on the last night of the Hereford Festival by arranging for a classical chamber concert, with a quartet party selected from the leading orchestral players. By this means the various forms of musical art workmanship would be represented, instead of merely giving specimens of the great choral works.

Abroad the famous Lower Rhenish Festival at Whitsuntide, held like our Three Choir Festivals at various towns in succession, was the first of the great events of the year. The programme, always classical and chiefly Teutonic, included music of a very different form to that provided in England, the purely orchestral predominating over the choral selections, although the *Messiah* was given on the first day. A more complete contrast than that afforded by the third or miscellaneous concert to the corresponding concerts at the English Festivals, could scarcely been imagined. The only names to be found in the scheme were those of the great masters from Haydn to Schumann and the works chosen were mainly of the severe type. This perhaps is going too far in the other direction, as there are other composers in the world worthy of a hearing beside the natives of the most recent Continental Empire, but at the same time English musicians may well learn a lesson from the contrast afforded to their own *ad captandum* programmes. In point of execution these performances at Aächen were unanimously admitted to be superb, a result greatly due to the frequent and patient rehearsals to which far more care is always devoted than it is the English practice to bestow on such matters. A few months later, towards the end of August, another great festival was held in honour of one composer at the birth-place of another—a Schumann celebration at Bonn, where a greater than Schumann, the grandest of tone-painters, Beethoven, first saw the light. At this festival the growing worship of the most interesting and perhaps the most unfortunate of the younger masters, seems to have culminated in an attempt to give a worthy representation of his music in its varied forms, not the least interesting part of the performances being those in which the solos were played by his widow—whose life and consummate ability have been laid as a worthy offering at her husband's shrine, his music always receiving at her hands the first attention and the most worthy execution. At these most interesting concerts were performed his *Paradise and the Peri*, the overture to *Manfred*, the Wachtlied, the pianoforte concerto in A minor, the third part of the *Faust*, and several of his most favourite chamber works. Here, as at Aächen, a magnificent orchestra was assembled, indeed it was pronounced by more than one competent English critic to be the finest band ever heard in Germany—in truth very high praise. Special interest attached to the performances from the fact that they were conducted by another of Germany's greatest musicians—an artist of whom the Fatherland has every cause to feel proud—the violinist Joachim, who used the *bâton* with the same masterly appreciation of the composer's intention that he ever shows when he is playing either as soloist or as the leader of a quartet party. This was a second instance of the same character that was noticed at Bristol where another great solo player, Mr. Charles Hallé, took his place at the conductor's desk.

In France and Belgium the same taste for musical festivals seems to be gaining ground, and several gatherings of consider-

able importance were held. Our Gallic neighbours have always developed to the utmost extent the growth of choral societies among the citizens, the civic authorities lending their aid by granting subventions and offering prizes, and thus the festivals of the Orphéonistes were among the most interesting events of the musical year in the provinces as well as in Paris, where the double interests of charity and art were promoted, the proceeds of many of the concerts being given to the funds for the relief of the sufferers by the Franco-German War. The Parisian Conservatoire de Musique, one of the leading continental music schools, now under the direction of M. Ambroise Thomas, successor of M. Auber, is recovering from the effects of the war during which it was closed, and its pupils scattered, and within a recent date a very important addition to its organization has been made in the establishment of a class for orchestral practices. In the various schools of composition, the younger French composers, although comparatively unknown in England, are busily employed, not only in the production of the Opera Bouffe which M. Offenbach and his numerous—though by no means always successful—imitators seem to be such prolific parents, but in the higher forms of orchestral and choral music. The Théâtre Italien which has been closed since the war, has again found a lessee in M. Strakosch, and thus every form of opera is once more represented in the French capital.

In America although there is fortunately no great "Jubilee," such as that which, two years ago proved a *fiasco* at Boston, to chronicle, the records of the year bear witness to the great popularity of music in the States, no less than three great opera companies including the most eminent European singers having been engaged for the autumn season. This is, however, only a proof that great names secure great audiences, and says comparatively little for the real musical taste of the people which is more distinctly vouched for by the increasing popularity of the fine concerts conducted by Mr. Theodore Thomas, with programmes including the symphonies and other chief works of the great masters, and a plentiful infusion of the productions of the modern German School, Wagner, Brahms, and Liszt being frequently represented. Here, however, as amongst ourselves, the attempt to induce the public largely to support the scheme for a great Wagner Theatre at Bayreuth, seems to have met with scant sympathy, and the composer and his friends have been compelled to hold a conference as to the possibility of carrying out their scheme.

Turning homewards once more, and surveying the results of the year, it is worthy of prominent notice that, not only at the Crystal Palace, but since April at the Royal Albert Hall, and for a portion of the year at the Alexandra Palace Concert Hall at Muswell Hill, daily orchestral performances have been given under the direction respectively of Mr. Manns, Mr. Barnby, (or in his absence of Mr. Deichmann) and Mr. Weist Hill. The programmes in each case have included a symphony or other great

work, and thus amateurs in the several districts have been afforded an opportunity never before placed within their reach (except at Sydenham) of studying from day-to-day the noblest creations of Haydn, Mozart, Beethoven, Mendelssohn, Schubert and Schumann, while at the Albert Hall the opportunity has been taken of introducing the works of our young English composers, and thus of affording them the hearing which, except in rare cases at the Crystal Palace, they have not enjoyed for some years. In the kindred domain of the Fine Arts, using that term in its colloquial but misapplied sense, for music is as much a Fine Art as painting or sculpture, every artist of merit may hope to display his work before the public year by year, even if his merit be not high enough to secure admission within the charmed circle of the Royal Academy, but in music the case is totally different, and it is almost impossible for a young and especially for a friendless musician to gain a hearing for any orchestral work. Such a defect in our musical organization is productive of serious evil to art, as it prevents progress, and discourages young composers, and on this ground alone it is to be hoped that Mr. Barnby will continue his performances. The list of music given at these concerts is in every way worthy of praise, no composer of note, ancient or modern, being unrepresented. Numerous recitals were given on the organ in the Great Hall by Dr. Stainer and Mr. W. T. Best, whose programmes included Bach's, Mendelssohn's, and Handel's most important works for the instrument, and much good music by recent writers.

While speaking of music at the Albert Hall, we must not omit to mention the concerts of the Choral Society, also directed by Mr. Barnby, at which the chief events of interest were the revival of Handel's *Belshazzar* and the execution on the first four evenings in Passion Week, of Bach's setting of the Passion according to St. Matthew, the audience being invited to join in the chorales, thus giving to the performance somewhat of the character of a service in the German fashion. The frequent use of this great work, and of the same master's setting of St. John's narrative, which was sung every week during Lent at St. Ann's Soho, with orchestral accompaniment, was indeed one of the features of the year, and both at St. Paul's Cathedral and in the provinces its performance attracted large congregations.

Leaving the Albert Hall, and looking at the orchestral concerts of the year generally, the winter concerts at the Crystal Palace deserve the first note, not only because of the unrivalled excellence of the orchestral playing under Mr. Manns, but because of the evident desire shown to introduce novelties concurrently with those greater works, one or more of which find a place in each programme. Among the works thus given for the first time were Mr. F. Cowen's Festival Overture and Symphony No. 2 in F, Mr. Crowther Alwyne's Mass in F, Hiller's Dramatic Fantasia, Henselt's Pianoforte Concerto (Op. 16), Prout's Organ Concerto in E minor, the Lustspiel Overture of Dr. Rietz, Smart's Overture to *King Rene's Daughter*, Shakespeare's Over-

ture in D, Schubert's Symphony in B♭ flat (No. 5), Stiehl's Scherzo for orchestra, Wagner's Overture to *Rienzi*, and Wingham's Festal Overture in C. The Philharmonic Society in its sixty-first season produced an unaccustomed number of novelties, including Brahms' Requiem, C. P. Emanuel Bach's Symphony in D, Liszt's "Tasso," Mr. G. A. Macfarren's Violin Concerto, and several other works which proved the desire of the directors to give a fair representation to every school. The marked improvement in the vocal music at the concerts of this venerable society demands a passing notice. The New Philharmonic Society contributed its usual quota to the orchestral concerts of the year, including in the number a recital of Wagner's *Lohengrin*. A more detailed notice is due to the British Orchestral Society, which, under the conductorship of Mr. George Mount, gave a series of six concerts at St. James's Hall, commencing in December, 1872. The society was established for the purpose of giving annually a series of concerts by British artists, and, in accordance with this view, the orchestra was mainly occupied by players with English or Anglicised names led by one of our most eminent national violinists, Mr. Carrodus. Another object in view, and a very laudable one, was to provide orchestral concerts at a period of the year when London is almost without such entertainments, the Philharmonic and New Philharmonic concerts never commencing until the spring. Both these ends were attained, and the performances were generally successful, serving also not only to promote nationality in music by employing native artistes, but by the encouragement of native composers, new works by Macfarren, Sullivan, and Barnett appearing in the scheme. At the same time, the programmes were not exclusively English; indeed, it would have been a mistake to have attempted to work on such a principle. During the autumn, orchestral concerts of a popular type have been given to overwhelming audiences at Covent Garden Theatre, under the direction of M. Rivière, on the plan so successfully worked by Julien and Mellon in days gone by, and with little better claim than they then possessed to be anything more than popular promenade concerts.

The chamber music concerts of the year call for little special notice, the uniform excellence of the Musical Union Matinées, and of the Monday and Saturday Popular Concerts being maintained from the beginning to the end of the season. Mr. Henry Holmes also added to the concerts of this class by his Musical Evenings; and at Brixton Mr. Ridley Prentice continued his Monthly Popular Concerts.

The choral performances of the year possessed but slight interest on the ground of novelty. The concerts of the Albert Hall have already been noticed. The programme of the Sacred Harmonic Society included the revival of Handel's *Deborah*, but beyond that it did not depart from the beaten track. The National Choral Society did not put in an appearance. At the concerts of M. Gounod's Choir the music given was

almost exclusively of his own composition or arrangement, and the choir had been trained by him or by Mrs. Weldon. The most important novelties sung were his Messe Brève, "SS. Angeli Custodes," and his "Requiem," together with several new songs and part songs.

The operas of the year at the two Italian houses, Covent Garden and Drury Lane, may be dismissed with a few words. At the seventy-nine performances at the former house, twenty-six works were given, but the promised novelties failed to find their way to the boards. A host of new singers were engaged, but very few of them made good their claim to be allowed to appear on such a scene, and the experience of the season does not tend to encourage the system of admitting a host of *débutantes* to a house of first-rate importance. At Her Majesty's Opera, still located at Drury Lane, fifty-seven performances were given, the number of operas standing at thirteen, without an attempt at novelty. Thus, at both houses the season passed away in the midst of mere repetitions of well-known works, a result little creditable to the managers who ought at any rate to feel that they have a duty to discharge to art as well as to fill their stalls. Opera of the lighter form found a home at several of the minor theatres, where it was given in English, and generally with a free adaptation of the music, but at the St. James's Theatre it was performed in its original language and with a French company. The popularity of this class of work is anything but a satisfactory sign of the times, as in the majority of cases even the slight amount of original music is allied with meaningless absurdities in the way of librettos, which would be insupportable even to a thoughtless audience but for the stage arrangements and the vivacity of the acting. English opera and opera in English were given at the Crystal Palace, but with scant success as far as the principal performers were concerned.

Apart from the executive branches of the art, a word must be said on the movement which has been made in several quarters to promote musical education. The report of Mr. John Hullah, strongly criticised though it has been by the Tonic Sol-Faists, who are too much disposed to impute unfair motives to the Government Inspector as to his treatment of students taught on their system, is eminently satisfactory, and fully justifies his appointment. He has been able to test in a thorough manner the musical instruction afforded in the Training Colleges where the future masters of our primary schools receive their education, and if the admirable suggestions contained in his report are acted upon great improvement must result, which will in time have a favourable effect on the schools throughout the country. From South Kensington has come a definite scheme for the promotion of musical education of a higher grade, by the foundation of a National Training School on an extensive basis; and much as we should regret to see the Royal Academy of Music supplanted by a new institution, it appears that its committee of management have so far refused to co-operate with the promoters

of the new school that no other course was left than to commence on an independent basis. This proceeding is accordingly being adopted, and the new school, which has already a name, will shortly have a "local habitation," close to the Albert Hall.

Church music and indeed worship music generally, whether in church or chapel, is making rapid progress year by year as far as its cultivation is concerned, until there seems no little danger lest zeal without discretion in this, as in other matters, should tend to injure a good cause. Improvement in the style and standard of the music used for religious services is by no means so marked as it should be, and thus the increase in the number of choral services and festivals suggests the need for some controlling power in the way of a choral association with a responsible central committee, coupled with the appointment of inspectors of choirs.

In this, then, as in other ways, as we said at the outset, activity has been the key-note of the year, and it is impossible, even in the face of this brief record of the music of 1873, to come to any other conclusion than that the progress made has, on the whole, been thoroughly satisfactory, as not only is high-class music being more and more generally performed, but the necessity for increased means of musical education for all classes of the population is being more generally admitted every day, and, what is still better, efforts are being made to supply it.

TABLE OF ALL THE PUBLIC GENERAL ACTS

PASSED IN THE FIFTH SESSION OF THE TWENTIETH PARLIAMENT OF GREAT BRITAIN AND IRELAND,

36 AND 37 VICTORIÆ.

(The Acts are given in the order in which they were passed, the number denoting the chapter. An Abstract of those Acts distinguished by an asterisk is given in the pages following this table, which contain a classified epitome of the more important statutes passed during the year.)

1. An Act for legalizing certain Marriages solemnized in Cove Chapel in Pitt Portion in the parish of Tiverton, Devon.

2. An Act to make special provisions in relation to the Constitution of certain Polling Districts at Parliamentary Elections in Ireland.
(Amends 35 & 36 Vict. c. 33 ; Ballot Act, 1872.
Repeals section 19 of 13 & 14 Vict. c. 69 ; Parliamentary Voters (Ireland).

3. An Act to apply £9,317,346 out of the Consolidated Fund to the service of the years ending the 31st of March, 1872, 1873, and 1874.

4. An Act to confirm an Agreement for a Lease by the Commissioners of Her Majesty's Works and Public Buildings to the Governors and Proprietors of King's College, London, of a piece of land on the Victoria Embankment annexed to Somerset House, and to give the said Commissioners further powers of leasing the said piece of land.
(Recites 25 & 26 Vict. c. 93 ; Thames Embankment.)

5. An Act to extend the time for the Epping Forest Commissioners to make their final report.
(Amends 34 & 35 Vict. c. 93 ; and 35 & 36 Vict. c. 95.)

6. An Act to enable Her Majesty by Order in Council to annex the Turks and Caicos Islands to the Colony of Jamaica.

7. An Act to enlarge the time within which an Address by either House of Parliament against certain Schemes made under the Endowed Schools Act, 1869, may be presented to Her Majesty.
(Amends 32 & 33 Vict. c. 56.)

8. An Act to make provision for the Assessment of Income Tax, and as to Assessors in the Metropolis.
(Applies provisions of existing Income Tax Acts.)

*9. An Act to amend the Bastardy Laws.
(Repeals sects. 6 and 8 and Second Schedule of 35 & 36 Vict. c. 65.
Revises rights under repealed Enactments of 7 & 8 Vict. c. 101.)

*10. An Act for punishing Mutiny and Desertion, and for the better payment for the Army and their Quarters.
(Applies 26 & 27 Vict. c. 57 ; Regimental Debts.
" Acts relating to Military Prisons.)

*11. An Act for the Regulation of Her Majesty's Royal Marine Forces while on shore.

*12. An Act to amend the Law as to the Custody of Infants.
(Repeals 2 & 3 Vict. c. 54.)

13. An Act to discontinue the Office of Special Commissioners of Salmon Fisheries in England.
(Amends 28 & 29 Vict. c. 121.)

14. An Act to repeal the Acts relating to the Harbour of Portpatrick in Scotland, and to vest the Lighthouse of Portpatrick in the Commissioners of Northern Lighthouses.

(Repeals 1 Geo. 4, c. 112; and 24 & 25 Vict. c. 106.
" part of 25 & 26 Vict. c. 69; Harbours Transfer.)

15. An Act to amend the New Zealand Roads, &c., Loan Act, 1870.

(Amends 33 & 34 Vict. c. 40.)

16. An Act to amend the Law relating to Marriages in Ireland in certain cases.

(Extends provisions of 7 & 8 Vict. c. 81. } Marriages (Ireland).)
" " 26 & 27 Vict. c. 27. }

17. An Act to provide for the Redemption or Commutation of the Dividend on the Capital Stock of the East India Company, and for the transfer of the Security Fund of the East India Company to the Secretary of State in Council of India, and for the Dissolution of the East India Company.

(Dissolves the East India Company on 1st June, 1874.)

18. An Act to grant certain Duties of Customs and Inland Revenue, and to alter other Duties.

(Grants Duties of Customs, Excise, and Income Tax as in Schedules.
Exempts hotel keepers from Duty on Servants under 32 & 33 Vict. c. 14.
Exempts from Stamp Duty Admissions to Thames Watermen's Co.
Repeals sections 10 & 11 of 35 & 36 Vict. c. 20 (Income Tax).
Applies provisions of existing Income Tax Acts.)

19. An Act for making better provision for the management in certain cases of Lands allotted under Local Acts of Inclosure for the benefit of the Poor.

(Provides for better management of Lands allotted under Local Inclosure Acts passed before 8 & 9 Vict. c. 118.
Repeals in part, and amends, 2 & 3 Will. 4, c. 42.
Provides for Land acquired under 59 Geo. 3, c. 12, and 1 & 2 Will. 4, cc. 42, 49, by Guardians of the Poor, &c., and applies 5 & 6 Will. 4, c. 69 s. 3.
Saves Jurisdiction of Charity Commissioners under "Charitable Trusts Act, 1853.")

20. An Act for legalizing Marriages solemnized in Fulford Chapel, in the parish of Stone, Staffordshire.

*21. An Act to abolish Tests in Trinity College and the University of Dublin.

(Repeals in part 33 Geo. 3, c. 21; (I.) Roman Catholic Relief.)

22. An Act to amend the law with respect to Customs Duties in the Australian Colonies.

23. An Act to amend the law relating to the grant of Superannuation Allowances and Gratuities to certain persons who entered the permanent Civil Service of the State between the passing of the Superannuation Act, 1859, and the 4th day of June, 1870.

(Amends 22 Vict. c. 26.)

24. An Act to continue The Peace Preservation (Ireland) Act, 1870, and The Protection of Life and Property in certain parts of Ireland Act, 1871.

(Continues 33 & 34 Vict. c. 9. } Until 1st June, 1875.)
" 34 & 35 Vict. c. 25. }

25. An Act for legalizing Marriages solemnized in Gretton Chapel, in the parish of Winchcomb, Gloucestershire.

26. An Act to apply the sum of £12,000,000 out of the Consolidated Fund to the service of the year ending the 31st of March, 1874.

27. An Act to amend the Law relating to Juries in Ireland.

(Amends 34 & 35 Vict. c. 65; and 35 & 36 Vict. c. 25.)

28. An Act to render valid Marriages heretofore solemnized in the Chapel of Ease called "Saint John the Evangelist" Chapel, Eton, in the parish of Eton, in the County of Buckingham.

29. An Act to alter the Duties of Customs upon Sugar in the Isle of Man.

(Repeals 33 & 34 Vict. c. 43.)

30. An Act to amend the Law of Registration in Ireland so far as relates to the year 1873, and for other purposes relating thereto.

(Amends 13 & 14 Vict. c. 69; Parliamentary Voters (Ireland).
„ 35 & 36 Vict. c. 33; Ballot Act, 1872.
„ 36 & 37 Vict. c. 2; Polling Districts (Ireland).)

31. An Act to extend to Suits for Nullity of Marriage the Law with respect to the Intervention of Her Majesty's Proctor and others in Suits in England for dissolving Marriages.

(Amends 23 & 24 Vict. c. 144; } As to Suits for Nullity of
„ 29 & 30 Vict. c. 32; } Marriage.)

32. An Act to enable the Secretary of State in Council of India to raise Money in the United Kingdom for the service of the Government of India.

(Recites 3 & 4 Will. 4, c. 85; East India Company's Charter.
Applies 22 & 23 Vict. c. 35, s. 32; }
„ 26 & 27 Vict. c. 73; } East India Stock.)
„ 32 & 33 Vict. c. 106; }

33. An Act to facilitate the Proof of Byelaws and Proceedings of Municipal Corporations in England and Wales.

(Facilitates proof of Byelaws made under 5 & 6 Will. 4, c. 76, &c.)

34. An Act to amend an Act passed in a session held in the 6th and 7th years of the reign of King William IV, chapter 116, intituled An Act to consolidate and amend the Laws relating to the Presentment of Public Money by Grand Juries in Ireland.

(Amends 6 & 7 Will. 4, c. 116.)

35. An Act to amend the Law relating to Securities for Loans contracted by County Authorities.

(Amends the law relating to securities for loans contracted by county authorities.)

36. An Act for making provision as to certain portions of Her Majesty's Woods, Forests, and Land Revenues, and for other purposes relating thereto.

(Extends 10 Geo. 4. c. 50 to the granting of Mining Leases.)

*37. An Act to amend the Law relating to Fairs in England and Wales.

(Repeals 31 & 32 Vict. c. 51.)

38. An Act to amend an Act passed in the 5th year of the reign of His Majesty George IV, c. 83, intituled "An Act for the punishment of Idle and Disorderly persons and Rogues and Vagabonds in that part of Great Britain called England," and to repeal "The Vagrant Act Amendment Act, 1868."

(Amends 5 Geo. 4, c. 83, and extends its provisions to gaming in public places, &c.

Repeals 31 & 32 Vict. c. 52.)

*39. An Act to amend the Act of the 3rd and 4th years of Victoria, chapter 113, for the Regulation of Cathedrals, and to facilitate the Endowment of Canonries by private benefaction.

(Amends 3 & 4 Vict. c. 113; Ecclesiastical Duties and Revenues.
„ 6 & 7 Vict. c. 77; Cathedral Churches, Wales.)

40. An Act to authorize the acquisition and appropriation by the Metropolitan Board of Works of certain land reclaimed from the River Thames in pursuance of the Thames Embankment Act, 1862.

(Amends 25 & 26 Vict. c. 93; } Thames Embankment.
„ 31 & 32 Vict. c. 111; }
Extends and applies section 4 of 35 & 36 Vict. c. 56; Thames Embankment.)

41. An Act to amend the Public Schools Act, 1868, as to the Property of Shrewsbury and Harrow Schools.

(Amends 31 & 32 Vict. c. 118 (Public Schools), as to the property of Shrewsbury and Harrow Schools.)

42. An Act for amending the Tithe Commutation Acts with respect to Market Gardens.

(Amends sections 40 and 42 of 6 & 7 Will. 4, c. 71; } As to Market Gardens.)
„ „ 26—33 of 2 & 3 Vict. c. 62; }
„ „ 18 and 19 of 3 & 4 Vict. c. 15; }
„ „ 42 of 23 & 24 Vict. c. 93; }

43. An Act to enable Indian Railway Companies to issue and register Shares and Securities in India.

*44. An Act to facilitate the payment of certain annuities for life or years, payable by the Commissioners for the Reduction of the National Debt.

(Amends 10 Geo. 4, c. 24; 2 & 3 Will. 4, c. 29; 3 & 4 Will. 4, c. 24; 16 & 17 Vict. c. 45; and 27 & 28 Vict. c. 43.)

45. An Act to authorise the Commissioners of Her Majesty's Treasury to guarantee the payment of a loan to be raised by the Government of Canada for the construction of public works in that country, and to repeal the Canada Defences Loan Act, 1870.

(Repeals 33 & 34 Vict. c. 82; Canada Defences Loan.)

46. An Act to afford facilities for the Transfer to the Grand Juries of the Counties of Cork and Waterford of the bridge across the River Blackwater, near the town of Youghal; and for other purposes relating thereto.

(Amends 9 Geo. 4, c. 53; and 30 & 31 Vict. c. 57.)

47. An Act to amend an Act passed in the session of Parliament held in the 30th and 31st years of the reign of Her present Majesty, intituled "An Act to authorise the Commissioners of Her Majesty's Treasury to compound the public debt due by the Commissioners of the bridge across the River Blackwater, near the town of Youghal, in the county of Cork, and for the transfer of the said bridge to the Grand Juries of the counties of Cork and Waterford; and for other purposes relating thereto."

(Amends 9 Geo. 4, c. 53; and 30 & 31 Vict. c. 57.)

*48. An Act to make better provision for carrying into effect the Railway and Canal Traffic Act, 1854, and for other purposes connected therewith.

(Amends 17 & 18 Vict. c. 31; Railway and Canal Traffic.
Applies 8 & 9 Vict. cc. 20, 33; Railway Clauses.

Applies 26 & 27 Vict. c. 92 ; Railway Clauses.
„ 29 & 30 Vict., c. 76 ; Public Offices Fees.
„ 31 & 32 Vict. c. 119 ; Regulation of Railways.)

*49. An Act to authorise Advances to the Public Works Loan Commissioners for enabling them to make Loans to School Boards in pursuance of the Elementary Education Act, 1870, and to Sanitary Authorities in pursuance of the Public Health Act, 1872.

(Authorises Loans to School Boards under 33 & 34 Vict. c. 75.
„ „ to Sanitary Authorities under 35 & 36 Vict. c. 79.)

*50. An Act to afford further facilities for the Conveyance of Land for Sites for Places of Religious Worship and for Burial Places.

(Applies 8 & 9 Vict. c. 18 ; Lands Clauses Consolidation.
„ Church Building Acts.)

51. An Act to amend the Law relating to the Superannuation of Prison Officers in Ireland.

(Repeals section 125 of 6 & 7 Will. 4, c. 116 ; Grand Jury Presentments (Ireland).
Repeals section 5 of 3 & 4 Vict. c. 44 ;
„ „ 23 of 19 & 20 Vict. c. 68 ; } Prisons (Ireland).
Applies section 15 of 28 & 29 Vict. c. 126 ; Prisons Act, 1865.)

*52. An Act for the Relief of Widows and Children of Intestates where the personal estate is of small value.

53. An Act to make better provision respecting certain sums payable to Schoolmasters of Highland Schools under the Act of the session of the first and second years of the reign of Her present Majesty, chapter 87, intituled "An Act to facilitate the foundation and endowment of additional Schools in Scotland."

(Repeals 1 & 2 Vict. c. 87 ; Highland Schools.
„ in part section 78 of 35 & 36 Vict. c. 62 ; Education (Scotland).)

54. An Act to raise the sum of £1,600,000 sterling by Exchequer Bonds for the service of the year ending on the 31st of March, 1874.

(Applies and extends (as to Forgery) 29 & 30 Vict. c. 25 ; Exchequer Bills and Bonds.)

55. An Act to amend the Medical Acts so far as relates to the University of London.

(Amends 21 & 22 Vict. c. 90 ; Medical Practitioners.)

56. An Act to reduce the Limit of the available Balance of the Treasury Chest Fund.

(Repeals section 1 of 24 & 25 Vict. c. 127 ; Treasury Chest Fund.)

57. An Act to make provision for the Redemption of divers permanent Charges on the Consolidated Fund and on the Votes of Parliament.

(Amends 29 & 30 Vict. c. 62 ; Crown Lands.)

58. An Act for making provision for facilitating the Manœuvres of Troops to be assembled during the ensuing Autumn.

(Applies Mutiny Act and Articles of War.
„ Summary Jurisdiction Act, 1848.)

59. An Act for regulating and extending the Jurisdiction in matters connected with the Slave Trade of the Vice-Admiralty Court at Aden, and of Her Majesty's Consuls under Treaties with the Sovereigns of Zanzibar, Muscat, and Madagascar, and under future Treaties.

(Repeals 32 & 33 Vict. c. 75 ; Slave Trade (Zanzibar).

Applies 6 & 7 Vict. c. 94; Foreign Jurisdiction.
„ 26 & 27 Vict. c. 24; Vice-Admiralty Courts.)

*60. An Act to amend the Extradition Act, 1870.
(Amends 33 & 34 Vict. c. 52; Extradition.)

61. An Act to explain and amend the Crown Private Estates Act, 1862.
(Amends and extends 25 & 26 Vict. c. 37; Crown Private Estates.
Extends section 3 of 3 & 4 Will. 4, c. 106; (Law of Inheritance) to private estates of Her Majesty.)

62. An Act to amend section 24 of the Public Schools Act, 1868, with respect to the property of Eton College.
(Amends section 24 of 31 & 32 Vict. c. 118; (Public Schools) as to Eton College Property.)

63. An Act to amend the Law relating to Law Agents practising in Scotland.
(Repeals 28 & 29 Vict. c. 85; Procurators (Scotland).)

64. An Act for amending the Ecclesiastical Commissioners Acts, 1840 and 1850, and for other purposes.
(Amends 4 & 5 Vict. c. Anne, c. 32; (Private) Lichfield Chapter.
„ 3 & 4 Vict. c. 113;
„ 4 & 5 Vict. c. 39;
„ 13 & 14 Vict. c. 94;
„ 23 & 24 Vict. c. 124; } Ecclesiastical Commissioners.

65. An Act to regulate the Summoning of Grand Juries in the Court of Queen's Bench in Ireland.

*66. An Act for the constitution of a Supreme Court, and for other purposes relating to the better Administration of Justice in England; and to authorise the transfer to the Appellate Division of such Supreme Court of the Jurisdiction of the Judicial Committee of Her Majesty's Privy Council.
(Provides for the Union of existing Courts into one Supreme Court of Judicature.
Applies all Acts of Parliament, Rules, &c., relating to former Courts to Courts constituted by this Act.)

*67. An Act to regulate the Employment of Children in Agriculture.
(Applies the Summary Jurisdiction Acts, 11 & 12 Vict. c. 43, &c.
Repeals part of section 4 of 30 & 31 Vict. c. 130; Agricultural Gangs.)

68. An Act for extending the Period of Service in the Militia; and for other purposes.
(Repeals section 107 of 42 Geo. 3, c. 90;
„ „ 103 of 42 Geo. 3, c. 91;
„ „ 38 of 49 Geo. 3, c. 120; } Militia.
Amends section 4 of 30 & 31 Vict. c. 111; Militia Reserve.
„ „ 10 of 35 & 36 Vict. c. 68; Military Forces Localization.)

69. An Act to provide for proceeding on Petitions of Right in the Courts of Law and Equity in Ireland.
(Applies 23 & 24 Vict. c. 34; Petitions of Right, England.)

70. An Act to amend the Law relating to the appointment of Revising Barristers and the holding of Revision Courts.
(Repeals section 4 of 26 & 27 Vict. c. 122; Circuits of Judges.

Repeals section 3 of 35 & 36 Vict. c. 84; Appointment of Revising Barristers.

(Amends and applies 6 & 7 Vict. c. 18; Parliamentary Electors Registration.

*71. An Act to amend the Law relating to Salmon Fisheries in England and Wales.

(Amends and in part repeals 24 & 25 Vict. c. 109; 28 & 29 Vict. c. 121; Salmon Fishery.
Amends 5 & 6 Vict. c. 24; 16 & 17 Vict. c. 47; Severn Navigation.
Applies Summary Jurisdiction Act, 1848; Documentary Evidence Act, 1868; and Malicious Injuries Act, 1861.)

72. An Act for the Amendment of the Defence Acts, 1842 and 1860.

(Amends 5 & 6 Vict. c. 94; and 23 & 24 Vict. c. 112.)

73. An Act to amend so much of section 4 of the Public Health Act, 1872, as relates to the Cambridge Commissioners.

(Amends so much of section 4 of 35 & 36 Vict. c. 79, as relates to Cambridge.)

74. An Act to amend the Laws relating to the Pay of the Royal Irish Constabulary.

(Empowers the Lord Lieutenant to fix revised salaries, notwithstanding limitations contained in 6 & 7 Will. 4, c. 13, s. 29.
22 & 23 Vict. c. 22, s. 5.
29 & 30 Vict. c. 103, s. 2.
33 & 34 Vict. c. 83, s. 12.)

75. An Act to continue various expiring Laws.

(Continues the following Acts (and Acts amending the same):—
5 & 6 Will. 4, c. 27; Linen, &c., Manufactures (Ireland).
2 & 3 Vict. c. 74; Unlawful Societies (Ireland).
3 & 4 Vict. c. 89; Poor Rates (Stock in Trade).
4 & 5 Vict. c. 30; Survey of Great Britain.
4 & 5 Vict. c. 35; Copyhold, &c., Commissions.
4 & 5 Vict. c. 59; Application of Highway Rates.
5 & 6 Vict. c. 123; Lunatic Asylums (Ireland).
10 & 11 Vict. c. 32; Landed Property Improvement (Ireland).
10 & 11 Vict. c. 98; Ecclesiastical Jurisdiction.
11 & 12 Vict. c. 32; County Cess (Ireland).
11 & 12 Vict. c. 107; Sheep and Cattle Diseases.
14 & 15 Vict. c. 104; Episcopal, &c., Estates.
17 & 18 Vict. c. 102; Corrupt Practices Prevention.
19 & 20 Vict. c. 36; Preservation of the Peace (Ireland).
23 & 24 Vict. c. 19; Dwellings for Labouring Classes (Ireland)
24 & 25 Vict. c. 109; Salmon Fishery (England).
25 & 26 Vict. c. 97; Salmon Fisheries (Scotland).
26 & 27 Vict. c. 105; Promissory Notes.
27 & 28 Vict. c. 9; Malt for Animals.
27 & 28 Vict. c. 20; Promissory Notes, &c. (Ireland).
27 & 28 Vict. c. 92; Public Schools.
28 & 29 Vict. c. 46; Militia Ballots Suspension.
28 & 29 Vict. c. 66; Malt Duty.
28 & 29 Vict. c. 83; Locomotives on Roads.
29 & 30 Vict. c. 52; Prosecution Expenses.
30 & 31 Vict. c. 36; Chester Courts.

30 & 31 Vict. c. 126; Railway Companies (Scotland).
30 & 31 Vict. c. 127; Railway Companies.
30 & 31 Vict. c. 141; Master and Servant.
31 & 32 Vict. c. 32; Endowed Schools.
31 & 32 Vict. c. 76; Militia Pay.
31 & 32 Vict. c. 125; Election Petitions, &c.
32 & 33 Vict. c. 21; Election Commissioners' Expenses.
34 & 35 Vict. c. 87; Sunday Observance Prosecutions.
34 & 35 Vict. c. 105; Petroleum).

76. An Act to make further Provision for the Regulation of Railways.

(Amends 3 & 4 Vict. c. 97; 5 & 6 Vict. c. 55; } Railway Regulation.
Applies Summary Jurisdiction Act, 1848.
" Summary Procedure Act, 1864.
" Petty Sessions (Ireland) Act, 1851, &c.)

77. An Act to provide for the establishment of a Royal Naval Artillery Volunteer Force.

(Applies Naval Discipline Act, 1866.
" Part V of the Volunteer Act, 1863, as extended by section 17 of Regulation of the Forces Act, 1871.
Applies Summary Jurisdiction Act, 1848.
" Summary Procedure Act, 1864.)

78. An Act to amend the Sanitary Act, 1866, so far as the same relates to the Nuisance Authorities of Ports in Ireland.

(Amends section 30 of 29 & 30 Vict. c. 90; so far as it relates to Ireland.
Construes Act with 29 & 30 Vict. c. 90; so far as relates to Ireland).

79. An Act to apply a sum out of the Consolidated Fund to the service of the year ending the 31st of March, 1874, and to appropriate the Supplies granted in this Session of Parliament.

80. An Act to enable Her Majesty to provide for the Establishment of His Royal Highness the Duke of Edinburgh and Her Imperial Highness the Grand Duchess Marie Alexandrovna of Russia, and to settle an annuity on Her Imperial Highness.

81. An Act to authorize the division of the Wapentake of Langbaurgh in the county of York into Districts for the purpose of Coroners' jurisdiction, and the appointment of additional Coroners for the said Wapentake.

82. An Act to amend the Law relating to Small Penalties in Ireland.

(Repeals all provisions of any Act authorising, in case of non-payment of penalty not exceeding £5, a longer term of imprisonment than is provided by this Act.)

*83. An Act for explaining the Telegraph Acts, 1868 to 1871, and for enabling a further Sum to be raised for the purposes of the said Acts and of the Pensions Commutation Act, 1872.

(Explains and amends 31 & 32 Vict. c. 110; 32 & 33 Vict. c. 73; 33 & 34 Vict. c. 88; 34 & 35 Vict. c. 13; } Telegraph Acts, 1868-71.
" " " 35 & 36 Vict. c. 83; Pensions Commutation.)

84. An Act to explain the Militia Pay Acts, 1868 and 1869, and to facilitate the sale of property held for Militia purposes.

(Amends 31 & 32 Vict. c. 76; 32 & 33 Vict. c. 66; } Militia Pay.
„ section 10 of 35 & 36 Vict. c. 68; Military Forces Localization.)

*85. An Act to amend the Merchant Shipping Acts.

(Amends, and in part repeals, 17 & 18 Vict. c. 104; 18 & 19 Vict. c. 91; 25 & 26 Vict. c. 63; 34 & 35 Vict. c. 110; } Merchant Shipping Acts, 1854–71.
Applies County Courts Admiralty Jurisdiction Act, 1868.
„ Court of Admiralty (Ireland) Act, 1867.
„ Foreign Jurisdiction Acts.)

86. An Act to amend the Elementary Education Act (1870), and for other purposes connected therewith.

(Amends, and in part repeals, 33 & 34 Vict. c. 75; Elementary Education Act, 1870.
Repeals 18 & 19 Vict. c. 34 (Denison's Act), and substitutes other provisions.
Amends section 12 of 29 & 30 Vict. c. 118; Industrial Schools.
Applies 10 & 11 Vict. c. 16; Commissioners Clauses.
„ 11 & 12 Vict. c. 43; Summary Jurisdiction.)

*87. An Act to continue and amend the Endowed Schools Act, 1869.

(Amends, and in part repeals, 32 & 33 Vict. c. 56.
Excepts Elementary Schools from 32 & 33 Vict. c. 56; and applies thereto section 75 of 33 & 34 Vict. c. 75.)

88. An Act for consolidating with Amendments the Acts for carrying into effect Treaties for the more effectual Suppression of the Slave Trade, and for other purposes connected with the Slave Trade.

(Repeals Acts relating to Treaties with Foreign States as described in the Schedule.
Applies 36 & 37 Vict. c. 59; Slave Trade (East Africa, &c.).
„ section 268 of 17 & 18 Vict. c. 104; Merchant Shipping.
„ 26 & 27 Vict. c. 24; Vice-Admiralty Courts.
„ 27 & 28 Vict. c. 24; Naval Agency and Distribution.
Incorporates Act with the unrepealed portions of 5 Geo. 4, c. 113; Slave Trade Act, 1824.
Extends 33 & 34 Vict. c. 52 (Extradition Act, 1870), to Slave offences.)

89. An Act to extend and amend the provisions of the Gas and Water Works Facilities Act, 1870.

(Amends 33 & 34 Vict. c. 70.)

90. An Act to continue certain Turnpike Acts in Great Britain, to repeal certain other Turnpike Acts, and for other purposes connected therewith.

(Repeals and continues Acts as in Schedule.)

91. An Act for further promoting the Revision of the Statute Law by repealing certain Enactments which have ceased to be in force or have become unnecessary.

(Repeals (with Savings) the Enactments described in the Schedule.)

ABSTRACTS OF IMPORTANT ACTS

PASSED IN THE FIFTH SESSION OF THE TWENTIETH PARLIAMENT OF GREAT BRITAIN AND IRELAND.

1. ARMY AND NAVY.

MUTINY IN THE ARMY.

[36 and 37 Victoriæ, cap. 10.—24th April, 1873.]

The preamble declares the necessity of providing for a more speedy punishment than the usual forms often allow of soldiers who shall mutiny or stir up sedition, or shall desert Her Majesty's service, or be guilty of crimes and offences to the prejudice of good order and military discipline; and the Act, consisting of 107 sections, proceeds to make provisions for this purpose. Section 2 defines the class of persons subject to the Act; section 3 extends its operation to Jersey, Guernsey, Alderney, Sark, and Man; section 4 places colonial and foreign troops under the Act; section 5 excepts the militia, volunteer, and reserve forces from the operation of the Act, unless under special circumstances. Sections 6 to 14 deal with the constitution and functions of courts martial. Sections 15 to 18 define the crimes punishable by death or penal servitude. Sections 22 to 24 relate to the infliction of corporal punishment. Sections 29 to 33 contain full regulations as to military prisons and the custody and discharge of prisoners. Section 34 supplies rules for the apprehension of deserters in the United Kingdom. Section 35 relates to the temporary custody of deserters in gaols, allowing the gaoler one shilling for undertaking the duty. Section 36 enacts that recruits deserting before joining their regiments shall forfeit their bounty, and be liable to be transferred to the nearest regiment, corps, or depôt. Section 39 enacts that persons acquitted by a civil magistrate shall not be tried by court-martial for the same offence. Section 40 deals with the liability of soldiers for debts. Section 41 enacts that officers shall not be sheriffs, mayors, or civil officials. Sections 42 to 52 relate to the enlistment of recruits. Sections 53 and 54 provide for the transfer of soldiers to corps succeeding those in which they have been serving, or for the transfer of soldiers from one branch of the service to another. Section 55 deals with the re-engagement of soldiers, and section 56 with the enlistment of negroes. Sections 57 and 58 provide for the punishment of apprentices enlisting under the pretence that they are not apprentices. Sections 62 to 67 relate to the billeting of troops. Sections 68 to 75 provide for the allowance of carriages in emergencies, the exemption of troops on duty or on march from payment of tolls, and the payment of half rates for passage in ferries in Scotland. Sections 77 to 88 provide for the imposition of penalties on persons unlawfully recruiting, inducing soldiers to desert, trafficking in commissions, aiding and abetting desertion and the escape of prisoners, purchasing military stores, on civilians or military offending against the law as to billets, and on officers killing game without leave. Sections 90 and 91 deal with the recovery and appropriation of penalties. The

remaining sections contain various provisions for the carrying out of the Act and limit the time of its operation.

MARINE MUTINY.

[36 and 37 Victoriæ, cap. 11.—24th April, 1873.]

An Act for the Regulation of Her Majesty's Royal Marine Forces whilst on Shore.

This Act applies to marines while on shore the various provisions of cap. 10, with certain necessary modifications.

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2. CHURCH AND EDUCATION.

CATHEDRAL CANONRIES.

[36 and 37 Victoriæ, cap. 39.—21st July, 1873.]

An Act to amend the Act of the third and fourth years of Victoria, chapter one hundred and thirteen, for the Regulation of Cathedrals, and to facilitate the Endowment of Canonries by private benefaction.

The preamble recites the 20th section of the 3rd and 4th Vict., cap. 113, which provides for the re-establishment of cathedral canonries, then suspended, by the assignment of a portion of the divisable corporate revenues remaining to the chapters for their re-endowment, and by assigning further sums, not exceeding 200*l.* for each canonry, and by the annexation to such canonry of a benefice in the patronage of the said chapter, with the patron's consent. The first section provides that, in any future scheme for re-establishing these canonries, it shall not be necessary to have any proposal for assigning towards their re-endowment any portion of the divisable corporate revenues remaining to the chapters; and that any plan not containing such a proposal may be carried into effect by the Ecclesiastical Commissioners. Section 2 provides that, in cases where there are no suspended canonries, plans may be laid before the Commissioners for the establishment of additional canonries and for the conversion of a non-residentiary prebend into a canonry, and for accepting from private persons money or land for the endowment of such canonry. The third section enacts that any plan laid before the Commissioners under this Act may contain proposals for assigning to the holders of the new or revised canonries any spiritual, ecclesiastical, eleemosynary, or educational duties for the benefit of the Church of England, and in connection with the diocese in which the cathedral or collegiate church is situate, and for fixing the residence of such holder or holders and his or their participation in the conduct of divine service, and in preaching in the said cathedral or collegiate church, and for limiting the tenure of the canonry or canonries to a term or terms of years, and for making this tenure dependent upon the performance of the duties assigned to the holder or holders, and for determining the patronage of the canonry or canonries, or for any one or more of the above-mentioned objects; provided always, that the patronage shall vest in Her Majesty or the bishop of the diocese, unless in the case of a canonry which is attached

to some already existing ecclesiastical or spiritual office. Where the patronage is not determined, or in so far as it is not determined in the plan, it is to be vested in the bishop of the diocese in which the said cathedral or collegiate church is locally situate. No holder of any canonry under this Act shall be bound to any other or further residence than is prescribed in the plan. The fourth section provides that any plan laid before the Commissioners under this Act may contain a further proposal for giving to the holder of such new or revived canonry such rights of membership of the chapter of the said cathedral or collegiate church as may be thought advisable, or the position in the said chapter of an honorary canon only: or, in the case of cathedral or collegiate churches having non-residentiary prebends, it may contain proposals for constituting such holder a non-residentiary prebendary. In all cases, the holder of such a canonry is to be visitable by the visitor of the chapter. The fifth section declares that this Act is to be construed with, and is part of, the principal Act, and that its short title is to be "The Cathedral Acts Amendment Act, 1873."

SITES FOR PLACES OF WORSHIP AND FOR BURIAL PLACES.

[36 and 37 Victoriæ, cap. 50.—21st July, 1873.]

An Act to afford further facilities of the Conveyance of Land for Sites of Places of Religious Worship and for Burial Places.

The preamble recites the expediency of providing greater facilities for granting sites for buildings for religious worship and for burial-places in England and Wales. By the first section, landlords are empowered to grant, convey, or enfranchise by way of gift, sale, or exchange, in fee simple or for any term of years, land to be used for this purpose, not exceeding one acre in extent, and not being part of a demesne or pleasure-ground attached to a mansion, also land for a minister's residence within one mile of such site. No grant of land by a life owner is to be valid unless the person next entitled to a beneficial interest in the same, or guardian, husband, or committee of such person is a party to, or joins in, the gift. It is also provided that, if such land, or any part thereof, ceases to be used for the purposes just named for a year at one time, it is to revert to its original owner. These provisions are to apply not only to manor or lands of freehold tenure, but to lands of copyhold or customary tenure, the Lands Clauses Consolidation Act, 1845, with respect to their being, for the purposes of this enactment, incorporated with this Act. The 2nd section contains provisions as to the payment of purchase-money for equality of exchange on any such sale, enfranchisement, or exchange. In the case of any persons entitled in fee simple or fee tail the purchase-money is to be paid to them direct, but if the seller has a life interest only it is to be paid to trustees, whose receipt is to be valid, and by whom it is to be invested for the same purposes as the land was originally devoted to. Section 3 contains provisions as to the conveyance of land by persons under disability; and section 4 gives the form to be adopted by persons who grant land for such purposes. Section 5 sanctions the conveyance of land in the ways before-mentioned for any of the purposes of the Church Building Acts, to the

Ecclesiastical Commissioners, or as such Commissioners may direct, and the Commissioners are authorised to act as trustees of sites granted under the Act. Section 6 limits its operation to England and Wales; and section 7 gives its short title as "The Places of Worship Sites Act, 1873."

UNIVERSITY OF DUBLIN TESTS ABOLITION.

[36 and 37 Victoriæ, cap. 21—26th May, 1873.]

An Act to abolish Tests in Trinity College and the University of Dublin.

The preamble recites the expediency of rendering freely accessible to the nation the benefits of Trinity College and the University of Dublin, and of the schools in the said University as places of religion and learning, and declares that as, by means of divers restrictions, tests, and disabilities, many of Her Majesty's subjects are debarred from their full enjoyment, it is expedient that these tests, &c., should be removed. Section 1 gives the short title of the Act as "The University of Dublin Tests Act, 1873." Section 2 recites that in the Construction of this Act, as long as the University of Dublin shall continue to teach and to grant degrees in the faculty of theology, the word "office" shall not apply to any professor of or lecturer in divinity; but, with this exception, the word shall include every professorship, assistant or deputy professorship, public readership, prelectorship, lectureship, assistant lectureship, provostship, fellowship, studentship, tutorship, scholarship, and exhibition, and also any office or emolument not in this section specified, the income of which is payable out of the revenues or income of the said university or college, or any of the schools therein, or which is held and enjoyed by any member of the same. The third section of the Act declares that from the date of its passing, no person, upon exercising, or to enable him to exercise, any of the rights and privileges of students or graduates, or upon taking or holding, or to enable him to take or hold, any office, or upon teaching, or to enable him to teach, within the said university or college, shall be required to subscribe to any article or formulary of faith, or to make any declaration or take any oath respecting his religious belief or profession, or to conform to any form of public worship, or to do any act in connection with any form of public worship, or to belong to any specified church, sect, or denomination; nor shall any person be compelled in the said university or college to attend the public worship of any church, sect, or denomination to which he does not belong; and no person elected to a fellowship or any other office shall be deprived of his office by reason that he is not nor does not become ordained in holy orders.

ENDOWED SCHOOLS.

[36 and 37 Victoriæ, cap. 87.—5th August, 1873.]

An Act to continue and Amend the Endowed Schools Act, 1869.

This Act passed to continue and amend the Endowed Schools Act, 1869, also effects some considerable alterations in that statute. Elementary schools where the educational endowment does not exceed 100*l.* a year are exempted from the operation of the Endowed Schools

Acts, and taken under the Elementary Education Act of 1870. The Endowed Schools Acts are now extended to endowments, &c., vested in Her Majesty in right of her Crown or of the Duchy of Lancaster. It is now enacted that it shall be the duty of the Commissioners in every scheme to have the same regard to the educational interests of persons in a particular class of life as they are by section 11 of the principal Act required to have the educational interests of any particular class of persons. Where, under the express terms of the original instrument of foundation of any endowed school or educational endowment, the holder of any particular office is a member of the governing body of the school or endowment, nothing in section 17 of the principal Act shall be deemed to prevent the holder for the time being from being retained as a member of the governing body of such school or endowment. The 7th section of the present Act extends the principal Act, section 19, to schools excepted from the provisions as to religion; and section 25 of the recited statute is now amended as to new endowment mixed with old buildings. Where it appears to the Commissioners that the endowment originally given less than 50 years before the commencement of the principal Act is in value not less than the old endowment, and was given under the belief that the old endowment was attached to some particular Church, sect, or denomination, a scheme relating to such endowment shall provide for the giving of religious instruction to the scholars belonging to such Church, sect, or denomination. There is an explanation given as to section 28, as to the alteration of schemes; and by the 11th section of the present Act it is provided that, where a scheme under the principal Act gives the governing body of any endowed school power to make regulations respecting the religious instruction given at such school, the scheme shall also provide for any alteration in such regulations not taking effect until the expiration of not less than one year after notice of the making of the alteration is given. The objections to schemes are to be made within two months instead of three months, and after one month's notice the Committee of Council on Education may, if they think fit, approve the scheme, and the same is to be published, and may be approved by Her Majesty without being laid before Parliament. During two months a petition praying that the scheme may be laid before Parliament may be presented to the Committee of Council on Education by the governing body of the endowment to which the scheme relates, or by the council of any municipal borough directly affected by the scheme, or by any inhabitant ratepayers, not less than 20, of any municipal borough or place directly affected by the scheme. An important alteration is now made as to the hearing of applications against schemes by Her Majesty in Council. Such petitions are to be heard "by persons of legal experience." The petitions are to be heard before the Judicial Committee, and they are to make a report to Her Majesty, and to give their opinion in open court as in other appeals. The power of making and approving a scheme under the principal Act as amended in this Act shall continue as respects unopposed schemes until the 31st of December, 1874, and as respect schemes against which a petition shall have been presented to the Committee of Council on Education, as in this Act provided, until the 15th of August, 1874. A graduate of any University of the United Kingdom, if otherwise fit, shall be held qualified where the statutes require the Head Master to be a graduate of Oxford or

Cambridge. There is a provision as to schemes laid before Parliament during the recent session. The portions of the principal Act repealed from the 1st of September are set forth in a schedule annexed to the statute.

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3. FINANCE AND TAXATION.

GOVERNMENT ANNUITIES.

[36 and 37 Victoriæ, cap. 44.—21st July, 1873.]

An Act to facilitate the Payment of certain Annuities for Life or Years, payable by the Commissioners for the Reduction of the National Debt.

This Act was passed to facilitate the payment of annuities by the National Debt Commissioners by sending the warrants for payment through the post. The Commissioners, by regulations, may provide for the production or transmission by post or otherwise to the persons prescribed by such regulations of the certificates and declarations which are required by the Acts regulating the payment to be produced before the payment of such annuities. Every warrant sent by post is to be deemed to be a check of the Commissioners within the meaning of any statute relating to checks. Every annuitant desirous of having a warrant sent to him through the post, shall give to the Commissioners an address in the United Kingdom, or in the Channel Islands, or in the Isle of Man, to which the letter containing such warrant is from time to time to be sent. The posting of a letter by the Commissioners containing a warrant addressed to an annuitant at his request at the address given by him, shall, as respects the liability of the Commissioners or the Consolidated Fund, be equivalent to the delivery of the warrant to the annuitant himself. Any sum payable by the Commissioners in respect of a Government annuity on the death of a nominee which is claimed within the period specified in the enactments regulating the payment of such sum may, if the Commissioners think fit, be paid at any time after the expiration of thirty days, on proof of such death. The Act and the statutes recited in the schedule may be cited as the Government Annuities Act 1829 to 1873.

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4. LAW AND JUSTICE.

CUSTODY OF INFANTS.

[36 and 37 Victoriæ, cap. 12.—24th April, 1873.]

An Act to amend the Law as to the Custody of Infants.

The preamble declares the expediency of further amending the law on this point, and section 1 empowers the Court of Chancery to order that a mother may have access to, or, if the Court deem proper, the custody of any infant or infants under sixteen years of age, or that such infants, if already in her custody, shall so continue up to that age, subject to such regulations for the access of the father or guardians to the infants as the Court may deem proper. The second section provides that no agreement contained in any separation deed made between the father and mother of an infant or infants shal be held

to be invalid by reason only of its providing that the father of such infant or infants shall give up the custody or control thereof to the mother: Provided always, that no Court shall enforce any such agreement if the Court shall be of opinion that it will not be for the benefit of the infant or infants to give effect thereto.

Section 3 repeals 2 and 3 Vict. cap. 54.

SUPREME COURT OF JUDICATURE ACT.

[36 and 37 Victoriæ, cap. 66.—5th August, 1873.]

An Act for the constitution of a Supreme Court and for other purposes relating to the better Administration of Justice in England; and to authorise the Transfer to the Appellate Division of such Supreme Court of the Jurisdiction of the Judicial Committee of Her Majesty's Privy Council.

The short title of this Act, which is divided into three parts, is "The Supreme Court of Judicature Act, 1873." The date of its coming into operation is fixed for the 2nd of November, 1874.

PART I.—*Constitution and Judges of Supreme Court.*

By section 3, the Superior Courts as now constituted will be united into one Court, to be called the Supreme Court of Judicature in England. The Courts thus absorbed will be the High Court of Chancery, the Courts of Queen's Bench, Common Pleas at Westminster, Exchequer, the High Court of Admiralty, the Courts of Probate and Divorce, and the London Court of Bankruptcy. The Supreme Court thus constituted will, by section 4, consist of two permanent divisions; one, to be called Her Majesty's High Court of Justice, will have original jurisdiction over all causes of action, with certain appellate jurisdiction from inferior courts, mentioned in a later provision of the Act; the other, to be called Her Majesty's Court of Appeal, will have only appellate jurisdiction, except such original jurisdiction as may be incident to the determination of any appeal.

By section 5, the *High Court of Justice* is to consist of the judges of the courts named in section 3, unless any of them shall be appointed to be ordinary judges of the Court of Appeal, and as vacancies arise the new judge, who will be appointed by letters patent, will become, not a judge of any particular part of the court, but a "judge of Her Majesty's High Court of Justice." The titles of Lord Chief Justice of England, Master of the Rolls, Lord Chief Justice of the Common Pleas, and Lord Chief Baron are to be continued, and the holders of those appointments will continue to occupy the same respective offices as heretofore. The judges of the High Court are to have equal power, authority, and jurisdiction, and are to be addressed as the common law judges now are. The Lord Chancellor is president of the High Court, but the Lord Chief Justice will preside in his absence.

By section 6, *Her Majesty's Court of Appeal* is to consist of five *ex officio* judges, and as many ordinary judges as Her Majesty may appoint, not exceeding nine. The *ex officio* judges will be the Lord Chancellor, the Lord Chief Justice of England, the Master of the Rolls, the Lord Chief Justice of the Common Pleas, and the Lord Chief Baron of the Exchequer. The ordinary judges are to be appointed by

letters patent; but in the first instance the ordinary judges will be the existing Lords Justices of Appeal in Chancery and the existing salaried judges of the Judicial Committee of the Privy Council, and three such other persons as may be appointed by letters patent. Besides these *ex officio* and ordinary judges of the Court of Appeal, other judges may be appointed, as Her Majesty is empowered to appoint under the sign manual, as additional judges, any person who, having been a judge of one of the superior courts of Westminster or the Supreme Court, Lord Justice General or Lord Justice Clerk in Scotland, Lord Chancellor or Lord Justice of Appeal in Ireland, or Chief Justice of any one of the high courts of Calcutta, Madras, or Bombay, shall signify his willingness to serve as an additional judge in the Court of Appeal. Attendance in the House of Lords or other reasonable impediment is to absolve an additional judge from the duty of sitting in the Court of Appeal. The title of the ordinary and additional judges of the Court of Appeal will be Lords Justices of Appeal, and all the judges will have equal power and jurisdiction unless otherwise expressly provided. The Lord Chancellor will be president of this court also. By section 7, judges may resign without deed of surrender; the office of Judge of the High Court is to be vacated by a judge's appointment to the Court of Appeal, but a vacancy is not to invalidate the constitution of either court. The qualifications of judges are described in section 8, which requires that a judge of the High Court of Justice shall have been a barrister of ten years' standing, while, for the Court of Appeal, the qualifications are the same as those of the present Court of Appeal in Chancery, or to have been a judge of the High Court of Justice of not less than one year's standing. A judge need not have been a Serjeant-at-Law. Section 9 enacts that the judges shall hold their office for life, subject only to power of removal by Her Majesty on an address presented to Her Majesty by both Houses of Parliament, and that no judge can sit in the House of Commons. The oaths of allegiance and judicial oaths are to be taken on admission to the judicial office. The precedence of the judges is determined by section 10. By section 11 it is provided that all the existing judges shall retain their right, as to tenure of office, rank, title, salary, pension, patronage, and powers of appointment as if the Act had not been passed, but they are to perform all duties which they would have performed before the commencement of the Act. No existing judge is to go to circuit or sit at Nisi Prius, unless he was liable by custom so to do before. The service of the present judges is to be reckoned on continuously, as if they had remained in their present positions. By section 12 it is declared that every judge of the High Court will be capable of exercising all extraordinary powers vested in the existing judge of any court, whose jurisdiction is transferred to the High Court, as if he were appointed successor of the judge, and any duty or power by law or custom imposed upon the Lord Chancellor and the Lord Chief Justice of England, and the Master of the Rolls, and the two other Common Law Chiefs, are to be performed by them and their successors. Sections 13, 14, and 15 prescribe the rules under which the judges' salaries and pensions are to be paid.

Part II.—*Jurisdiction and Law.*

The second part of the Act treats of the jurisdiction of the High Court of Justice and of the Court of Appeal, and includes modifica-

tions of certain rules of law. *The Jurisdiction of the High Court* is defined in section 16, by which it is provided that the High Court of Justice shall be a Superior Court of Record, and shall have transferred to and vested in it the jurisdiction which was, before the commencement of the Act, vested in or capable of being exercised by the following courts: (1) The High Court of Chancery as a common law court as well as a court of equity, including the jurisdiction of the Master of the Rolls as a judge or master of the Court of Chancery, and any jurisdiction exercised by him in relation to the Court of Chancery as a common law court; (2) the Court of Queen's Bench; (3) the Court of Common Pleas at Westminster; (4) the Court of Exchequer, as a Court of Revenue, as well as a Common Law Court; (5) the High Court of Admiralty; (6) the Court of Probate; (7) the Court for Divorce and Matrimonial Causes; (8) the London Court of Bankruptcy; (9) the Court of Common Pleas at Lancaster; (10) the Court of Pleas at Durham; (11) the courts created by Commissioners of Assize, of Oyer and Terminer, and of gaol delivery, or any of such commissions; and the jurisdiction conferred by the Act includes all jurisdiction, with certain named exceptions, vested in, or capable of being exercised by, any one or more of the judges of those courts sitting in court or in chambers, or elsewhere, when acting as judges or judge in pursuanee of any statute law, or custom, and all powers given to any such court, or to any such judges or judge by any statute; and also all ministerial powers, duties, and authorities incident to any and every part of the jurisdictions so transferred. The cases in which the jurisdiction of existing courts is not transferred are detailed in section 17, by which it is provided that the "High Court of Justice" shall not have (1) any appellate jurisdiction of the Court of Appeal in Chancery, or of the same court sitting as a Court of Appeal in Bankruptcy; (2) any jurisdiction of the Court of Appeal in Chancery of the County Palatine of Lancaster; (3) the jurisdiction of the Lord Chancellor and Lords Justices over the persons and estates of lunatics; (4) the Lord Chancellor's jurisdiction over patents, or the issue of commissions under the great seal; (5) jurisdiction of the Lord Chancellor as visitor of any college or charitable foundation; (6) jurisdiction of the Master of the Rolls, in relation to records in London or elsewhere.

The Jurisdiction of the Court of Appeal is defined in section 18, which enacts that it is also to be a Superior Court of Record, with the jurisdiction and powers of the following courts: (1) all the jurisdiction and powers of the Lord Chancellor, and of the Court of Appeal in Chancery, in the exercise of his and its appellate jurisdiction, and of the same court as a Court of Appeal in Bankruptcy; (2) the jurisdiction of the Court of Appeal in Chancery of the County Palatine of Lancaster and the jurisdiction of the Chancellor of the Duchy and County Palatine when sitting alone as a Judge of Appeal from orders of the Court of Chancery of the County Palatine; (3) all the jurisdiction of the Court of the Lord Warden of the Stannaries; (4) all the jurisdiction and powers of the Court of Exchequer Chamber; (5) all the jurisdiction vested in Her Majesty in Council or the Judicial Committee upon appeal from the High Court of Admiralty, or from any order in lunacy made by the Lord Chancellor or any other person having jurisdiction in lunacy. By section 19, it is ruled that appeals from the High Court will lie to the Court of Appeal under rules to be made hereafter, and the Court of Appeal, for the purposes of determin-

ing matters brought before it on such appeal, will have all the powers and jurisdiction of the High Court of Justice.

By section 20, it is enacted that from the date of the commencement of the Act, no error or appeal can be brought from any judgment or order of the High Court of Justice or of the Court of Appeal, nor from any judgment or order, made after the commencement of the Act, of the Court of Chancery, of the County Palatine of Lancaster, to the House of Lords, or to the Judicial Committee of the Privy Council; but this will not prejudice any right existing at the commencement of the Act to prosecute any pending suit of error or appeal, or to bring error or appeal to the House of Lords, or Her Majesty in Council. Section 21 provides for the transfer of the jurisdiction of the Judicial Committee of the Privy Council to the Court of Appeal, giving power to the Queen in Council to direct that all appeals and petitions to Her Majesty in Council, shall be transferred for hearing to the Court of Appeal, to which all the power, authority, and jurisdiction now vested in the Judicial Committee is transferred for the purposes of hearing and reporting on cases, and of making and enforcing orders. It provides also that the Court of Appeal, when hearing any appeals in ecclesiastical causes referred to it in the manner above mentioned, shall be constituted of so many and such judges of the court, assisted by such assessors, being archbishops or bishops of the Church of England, as Her Majesty by any general rules made with the advice of the Lord Chancellor and Judges, and of the archbishops and bishops who are members of the Privy Council, may direct; these rules are to be made by Order in Council, and are to be laid before Parliament within forty days of the making of the same. The transfer of pending business is dealt with in section 22, which provides that from the date of the commencement of the Act, the several jurisdictions transferred to the High Court and the Court of Appeal shall cease to be exercised except by the High Court and Court of Appeal as provided by the Act; and that no appointment of a judge to any court whose jurisdiction is transferred shall be made except as provided by the Act. With respect to pending business it is enacted that in all matters which have been fully heard, but in which judgment has not been given, or not signed, or entered up before the commencement of the Act, judgment may be given, signed, or entered up after the commencement of the Act in the name of the same court, and by the same judges and officers, and in the same manner, as if the Act had not been passed, and shall have the same effect as if perfected before the commencement of the Act. Every judgment or order of any court whose jurisdiction is transferred, duly perfected before the commencement of the Act, may be enforced, and, if necessary, amended or discharged by the High Court and the Court of Appeal respectively, as if it had been made by one of those courts. All matters pending, whether civil or criminal, in any of the courts whose jurisdiction is transferred, will be continued and concluded in either the High Court of Justice or the Court of Appeal, according as they are proceedings in error or in appeal, or causes of first instance. The Supreme Court will have the same jurisdiction over such pending matters as if they had been commenced in the High Court of Justice; and the form of such continued proceedings will be the same as they would have been in the now existing court, unless the Supreme Court shall otherwise direct. By the 23rd section it is

provided that the jurisdiction of the Supreme Court is to be exercised according to this Act (as shown in the schedules) or by rules and orders of court made in pursuance of the Act. Where no special provision is made, the jurisdiction of the court is to be exercised as in the courts whose jurisdiction is transferred. Section 24 provides for the concurrent administration of law and equity in the High Court of Justice and the Court of Appeal, under certain rules contained in seven subsections. Section 25 deals at length with the alterations of law involved by the amalgamation of the various courts on the following heads: Administration of Assets of Insolvent Estates—Statutes of Limitation inapplicable to express trusts—Equitable Waste—Merger—Suits for Possession of Land by Mortgagors—Assignment of Debts and Choses in Action—Stipulations not of the Essence of Contracts—Injunctions and Receivers—Damages by Collisions at Sea—Infants—Cases of Conflict not enumerated. This section completing the second part of the Act, fully regulates the jurisdiction of the new courts.

PART III.—*Sittings and Distribution of Business.*

This part of the Act, consisting of twenty-nine sections, deals at length with the sittings of the new courts and the division of business among them. By section 26, the divisions of the legal year into terms are abolished as far as relates to the administration of justice, but in all other matters the terms may continue to be used for the purpose of determining the time at or within which an act is required to be done. The courts and any of the judges may sit at any time and any place for the transaction of business, or for the performance of any duty which by Act of Parliament may be performed during or after term. By section 27, power is given to Her Majesty to make rules at once fixing vacation, on the recommendation of the judges, and after the Act is in force to make or alter rules for that purpose, on the advice of the council of judges, whose meeting is provided for by section 75. By section 28, provision is to be made by rules of court for the hearing of applications during the vacation by Judges of the High Court of Justice and the Court of Appeal respectively. The power of the Crown to grant commissions of assize on circuit is continued by section 29, for the trial of any issues of fact or of law, or partly of fact or partly of law, and any commissioners so appointed and acting, are to be considered a court of the High Court of Justice. Subject to restrictions by rules of court parties to any cause as above referred to may, with the leave of the judge to whose decision the cause is assigned, require the issue to be tried by the circuit judge or commissioner, or at sittings in London or Middlesex, as provided by the Act, and every such question shall be so tried. A cause or matter not involving any question or issue of fact may be tried and determined in like manner, with the consent of all the parties thereto. Subject to rules of court, sittings for the trial by jury of causes and questions or issues of fact, shall be held in Middlesex or London, so far as practicable, and subject to vacations, continuously throughout the year, and any Judge of the High Court of Justice so sitting at Westminster or Guildhall will be deemed a court of the High Court. Sections 31 and 32 deal with the divisions of the courts and the distribution of business among them, the latter being regulated both as to its commencement and transfer by rules of court or orders of transfer (sect. 33); but in the meanwhile, and subject to these rules and orders, all causes and

matters are to be assigned to the several divisions as provided in the following sections. Every document by which any cause or matter is commenced must be marked with the name of the division or the name of the judge to which or to whom the same is assigned.

Subject to these rules and orders to the Chancery division there are assigned by the Act (sect. 34): (1) all causes and matters pending in the High Court of Chancery at the commencement of the Act; (2) all causes and matters to be commenced after the commencement of the Act under any Act of Parliament by which exclusive jurisdiction in respect to such causes or matters has been given to the Court of Chancery, or to any judges or judge thereof, except appeals from county courts; (3) all causes and matters for any of the following purposes: the administration of the estates of deceased persons; the dissolution of partnerships or the taking of partnership or other accounts; the redemption or foreclosure of mortgages; the raising of portions or other charges on land; the sale and distribution of the proceeds of property subject to any lien or charge; the execution of trusts, charitable or private; the rectification or setting aside, or cancellation, of deeds or other written instruments; the specific performance of contracts between vendors and purchasers of real estates, including contracts for leases; the partition and sale of real estates; the wardship of infants, and the care of infants' estates. To the Queen's Bench division there are assigned: (1) all causes and matters civil and criminal, pending in the Court of Queen's Bench at the commencement of the Act; (2) all causes and matters, civil and criminal, which would have been within the exclusive cognizance of the Court of Queen's Bench in the exercise of its original jurisdiction if the Act had not passed. To the Common Pleas division there are similarly assigned: (1) all causes and matters pending in the Court of Common Pleas at Westminster, the Court of Common Pleas at Lancaster, and the Court of Common Pleas at Durham respectively, at the commencement of the Act; (2) all causes and matters that would have been within the exclusive cognizance of the Court of Common Pleas at Westminster, but for the passing of the Act. To the Exchequer division there are assigned: (1) all causes and matters pending in the Court of Exchequer at the commencement of the Act; (2) all causes and matters which would have been within the exclusive cognizance of the Court of Exchequer, either as a court of revenue or as a common law court, but for the passing of the Act; (3) all matters pending in the London Court of Bankruptcy at the commencement of the Act; (4) all matters to be commenced after the commencement of the Act, under any Act of Parliament by which exclusive jurisdiction has been given in respect to such matters to the London Court of Bankruptcy. To the Probate, Divorce, and Admiralty division there are assigned: (1) all causes and matters pending in the Court of Probate, or in the Court for Divorce and Matrimonial Causes, or in the High Court of Admiralty, at the commencement of the Act; (2) all causes and matters which would have been within the exclusive cognizance of those courts if the Act had not passed. Section 35 gives option to a plaintiff (subject to rules) to choose in which of the above divisions he will sue. Section 36 gives power for the transfer of a cause from one division or judge of the High Court to another. Section 37, referring to the sittings in London and Middlesex, and on circuits, provides that these trials shall take place

before the judges of the three common law divisions, subject to the proviso that any ordinary judge of the Court of Appeal, or of the Chancery division, to be appointed after the commencement of the Act, or any Serjeant-at-Law or Queen's Counsel may be included in the commission with the powers of a judge of the High Court. Election petitions are to be tried (sect. 38), as heretofore, before the judges of the common law divisions selected according to rules of court, or, until these rules are made, chosen as if the several divisions had been framed in the Parliamentary Elections Act, 1868, instead of the several courts, that is to say, selected by the judges of those divisions. Power is given (sect. 39) to any single judge of the High Court to exercise in court or chambers, subject to rules of court, all or any part of the jurisdiction by the Act vested in the High Court, in all causes and matters, and all proceedings relating thereto, which may not be heard in court or in chambers by a single judge, or which may be so directed to be heard by any rules of court. In such cases the single judge is to be deemed a court.

Those matters which are not proper to be heard by a single judge are, by section 40, to be heard by divisional courts of the High Court, exercising for that purpose all the jurisdiction of the High Court. Any number of these divisional courts may sit at the same time. A divisional court shall be constituted by two or three, and no more, judges, and, except when through pressure of business or any other cause it may not conveniently be found practicable, shall be composed of three judges. Every judge of the High Court is empowered to sit in any of the divisional courts. The president of every such divisional court is to be the senior judge present. By section 41, matters which would now be heard *in banco* by the three common law courts are to be disposed of before divisional courts, which are to include, as far as practicable and convenient, one of the judges attached to the particular division to which the cause is assigned; and every judge of the division to which the cause is assigned is required, if not occupied in the transaction of any business not specially assigned to them or in the business of any other divisional court, to take part in the sittings of the divisional court held for the transaction of the business of his division. All arrangements for the sittings of divisional courts for the above or any other purpose, and for the transaction of the business of the common law divisions, which ought to be transacted by one or more judges not sitting in a divisional court, are to be made by the judges, and in case of difference among them, in such manner as a majority of them, with the concurrence of the Lord Chief Justice of England shall determine.

It is enacted by section 42, that subject to any rules of court, and until such rules are made, all business arising out of any cause or matter assigned to either of those divisions shall be transacted and disposed of in the first instance by one judge only, as has been usual in the Courts of Chancery, Probate, Divorce, and Admiralty. Every cause pending at the time of the commencement of the Act in those courts is to be assigned to the same judge in whose court the same may have been pending at the commencement of the Act. Every cause commenced after the commencement of the Act in the Chancery division is to be assigned to one of the judges of that division by marking it with the name of the judge the petitioner may think fit. Every cause, which, if the Act had not passed, would have been in

the exclusive jurisdiction of the High Court of Admiralty is to be assigned (subject to rules of court, power of transfer, and the provisions of the Act as to the trial of issues of fact) to the present judge of the High Court of Admiralty during his continuance in office as a judge of the High Court. By section 43 it is enacted that divisional courts may be held for the transaction of any part of the business assigned to the Chancery division which the judge to whom such business is assigned, with the concurrence of the President of the division, deems proper to be heard by a divisional court. Similarly divisional courts may be held for the transaction of Probate, Divorce, and Admiralty business. Any cause assigned to the last-named division may be heard, with the consent of the President of the High Court, before any other judge of the High Court. Appeals from petty or quarter sessions, from County Courts or from any inferior court, which might before the passing of the Act have been brought to any court or judge whose jurisdiction is transferred to the High Court, may be heard (sect. 45) and determined by divisional courts consisting of judges to be assigned for that purpose by rules of court or by arrangement among the judges. The determination of these appeals by divisional courts is to be final unless special leave to appeal to the Court of Appeal be given by the court hearing the appeals. Power is given by section 46, to any judge of the High Court, sitting elsewhere than in a divisional court, to reserve any case, or point in any case, for the consideration of a divisional court, or to direct a case or point to be argued before such a court, and any divisional court has power to determine any such case or point. The jurisdiction to hear and determine Crown cases reserved is to be exercised under section 47, by the judges of the High Court, or five of them at least, of whom the Lord Chief Justice of England, the Lord Chief Justice of the Common Pleas, and the Lord Chief Baron, or one of such chiefs at least, shall form part. The determination of any question so reserved by the Judges of the High Court is to be final and without appeal; and no appeal will lie from any judgment of the High Court in any criminal cause or matter, save for some error of law apparent upon the record, as to which no question shall have been reserved for the consideration of the judges as a Crown case reserved. Motions for new trials, in arrest of judgment, to enter judgment *non obstante veredicto*, to enter a verdict for plaintiff or defendant, to enter a nonsuit, or to reduce damages, are by section 48, to be heard before a divisional court; and no appeal will lie from any judgment founded upon or applying a verdict, unless a motion has been made or other proceeding taken before a divisional court to set aside or reverse such verdict, or the judgment, if any, founded thereon, in which case an appeal will lie to the Court of Appeal from the decision of the divisional court. By section 49, no order made by the High Court or any judge thereof, by the consent of parties, or as to costs only, which by law are left to the discretion of the court, will be subject to any appeal, except by leave of the court or judge making such order; but by section 50, orders other than these may be set aside or discharged upon notice by any divisional court, or by the judge sitting in court, according to the practice of the division to which the particular cause or matter in which the order is made is assigned; and no appeal will lie from any order, to set aside which no motion has been made, unless by special leave of the judge by whom such order is made, or of the Court of

Appeal. To provide for vacancies whether temporary or otherwise, among the judges of the High Court, power is given by section 51, to the judges of the Court of Appeal, on the request of the Lord Chancellor, to perform the duties of any judge of the High Court absent from illness or other cause, or whose office has become vacant, or to sit as an additional judge.

The sittings of the Court of Appeal are regulated by the remaining sections. In any cause pending before the Court of Appeal, any direction, not involving the decision of the appeal, may, by section 52, be given by a single judge, and any single judge may make any *interim* order in vacation to prevent prejudice to the parties, subject to such order being varied by the full court. Every appeal to the Court of Appeal is to be heard by the whole court or a divisional court, consisting of any number not less than three of the judges of that court. Any number of these divisional courts may, by section 53, sit at the same time; but if any cause be deemed of sufficient importance, the division may order it to be re-argued before a greater number of judges. By section 54, no judge of the Court of Appeal may sit as a judge on the hearing of an appeal from any judgment or order made by him, or made by a divisional court of the High Court, of which he is a member. Arrangements for the transaction of the appellate business and for holding divisional courts of the Court of Appeal, are, by section 55, to be made by the President and *ex officio* and ordinary judges of the Court of Appeal. For the purpose of hearing Privy Council business referred to the Supreme Court by Order in Council under section 21, not less than one divisional court will sit through the year (except during vacations); and this divisional court will consist of judges of the Court of Appeal, who are also members of the Privy Council. The Indian assessors appointed to attend the Judicial Committee may also attend this divisional court. Arrangements for the sitting of this court as to place and attendance of Her Majesty's registrar are to be made by the Lord Chancellor with the concurrence of the President of the Council, who shall give directions to the officers of the Privy Council to carry these arrangements into effect.

Part IV.—*Trial and Procedure.*

The fourth part of the Act, from sections 56 to 76, deals at length with the methods of Trial and Procedure.

Part V.—*Officers and Offices.*

Part V (sections 77 to 87 inclusive) contains the provisions relating to the transfer of officers and offices from the existing courts to the new courts, the status of the officers, their duties, the filling up of vacancies, &c.

Part VI.—*Jurisdiction of Inferior Courts.*

Part VI defines the jurisdiction of inferior courts (sections 88 to 91).

Part VII.—*Miscellaneous Provisions.*

Part VII (sections 92 to 100) contains miscellaneous provisions for the fulfilment of the Act. The schedule contains the Rules of Procedure in 58 sections.

LOANS TO SCHOOL BOARDS AND SANITARY AUTHORITIES.

[36 and 37 Victoriæ, cap. 49.—21st July, 1873.]

An Act to authorise Advances to the Public Works Loan Commissioners for enabling them to make Loans to School Boards in pursuance of the Elementary Education Act, 1870, and to Sanitary Authorities in pursuance of the Public Health Act, 1872.

Under the authority of this Act, the Treasury is empowered to issue 3,000,000*l.* out of the Consolidated Fund to the Public Works Loan Commissioners, to enable them to make loans to School Boards in pursuance of the Elementary Education Act, 1870, and to Sanitary Authorities under the Public Health Act. The 57th section of the 33 and 34 Vic., cap. 75, provides that where a School Board incur any expense in making or enlarging a school-house they may, with the consent of the Education Department, spread the payment over several years, not exceeding 50, and may for that purpose borrow money on the security of the school fund and local rate, to bear interest at the rate of 3½ per cent. The Public Works Loan Commissioners may, on the recommendations of the Local Government Board, make loans under the Public Health Act for sanitary purposes at the same rate of interest, or any such rate as the Commissioners of the Treasury deem necessary, in order to enable the loan to be made without loss to the Exchequer. The Treasury may now, from time to time, cause to be charged on the Consolidated Fund 3,000,000*l.* for school loans and sanitary loans at the disposal of the Public Works Loan Commissioners. The National Debt Commissioners may invest money in their hands under this Act.

BASTARDY LAWS AMENDMENT.

[36 and 37 Victoriæ, cap. 9.—24th April, 1873.]

The preamble recites that it is desirable to amend the Bastardy Laws Amendment Act of 1872, and the second section repeals the sixth and eighth sections and the second schedule of that Act, except as to anything heretofore done thereunder or before the passing of this Act. Section 3 revives the right of any woman delivered of a bastard child on or before the 10th of August, 1872, to apply for a summons against its putative father as follows: (*a.*) In any case in which she would have been entitled to apply at any time within twelve months from the birth of the child, she shall be entitled to apply at any time within six months next after the passing of this Act; (*b.*) And in any case in which she would have been entitled to apply at any time after twelve months from the birth of the child, upon proof that the man alleged to be the father of the child had within the twelve months next after the birth of the child paid money for its maintenance, she shall be entitled to apply at any time after the passing of this Act upon the like proof; (*c.*) And upon any such application the same proceedings shall or may be taken, and the same consequences, including all rights of appeal, shall or may ensue, as should or might have been taken or have ensued if the said enactments had not been repealed by the said recited Act.

By section 3 it is enacted, that in cases where the putative father

resides out of the petty sessional district where the mother applies for the summons or order of maintenance, an affidavit that the summons or order has been duly served will be receivable in evidence. Section 4 empowers the Guardians of a Union to which a bastard child becomes chargeable, to apply to the justices of the peace having jurisdiction in the union or parish in petty sessions, and authorises such justices to summon the putative father, and on his appearance, or on proof of service of the summons, to hear the evidence of the mother, and if it be corroborated to their satisfaction, to order the father to pay to the guardians such sum as appears to them to be proper for the child's maintenance, the payment being recoverable by the relieving officer, in the same way as if it had been a payment to the mother, provided: (1) that the payment is only recoverable while the child is actually in receipt of relief; (2) that no order shall be made if the mother has obtained a previous order; (3) that nothing in this section relieves the mother from her liability to maintain her bastard child; (4) that the person against whom the order is made has the same right of appeal as against an order obtained on the mother's application; (5) that if after an order has been made under this section, the mother should apply for an order under the Act of 1872, or this Act, the order made under this shall be *primâ facie* evidence that the man upon whom the order is made is the father of the child. Section 6 empowers the Local Government Board to issue such new or altered forms of proceeding as they may deem needful to carry out these Acts. Section 7 provides that when two justices having jurisdiction to hear a case under this Act are not present, an adjournment may be made, and the defendant meanwhile allowed to go at large on his own recognizance with or without sureties for his reappearance, at the discretion of the justices. Section 8 declares all orders made on putative fathers of bastard children before the passing of this Act to be valid. Section 10 confines the operation of the Act to England and Wales. The second schedule gives the form of affidavit to be made by the officer who serves the summons or order on a putative father.

EXTRADITION ACT.

[36 and 37 Victoriæ, cap. 60.—5th August, 1873.]

An Act to Amend the Extradition Act, 1870.

By this Act which is to be construed as one with the Extradition Act of 1870, various sections of that Act are explained, and an addition is made in a schedule, to the list of crimes to which the Acts are now applicable. It is now provided by section 5, that a Secretary of State may, by order under his hand and seal, require a police magistrate or a justice to take evidence for the purposes of any criminal matter pending in any court or tribunal in any foreign State, and the police magistrate shall take the evidence of every witness in like manner as if such witness appeared on a charge against some defendant for an indictable offence, and the same to be transmitted to the Secretary of State. Such evidence may be taken in the presence or absence of the person charged, if any, and the fact of such presence or absence shall be stated in such deposition. Persons giving false evidence under this section are to be guilty of perjury.

ADMINISTRATION OF SMALL ESTATES.

[36 and 37 Victoriæ, cap. 52.—28th July, 1873.]

An Act for the Relief of Widows and Children of Intestates where the Personal Estate is of Small Value.

The preamble declares the expediency of increasing the facilities for, and reducing the expenses of taking out letters of administration to the estates and effects of poor persons dying intestate. Section 1 enacts that where the whole estate and effects of an intestate shall not exceed the value of 100*l.*, his widow, or one or more of his children, if they reside more than three miles from the Registry of the Court of Probate having jurisdiction in the matter, may apply to the registrar of the County Court within the district where the intestate lived, and that he may fill up the usual papers, swear the applicant, and attest the execution of the administration bond, transmitting the papers to the registrar of the Court of Probate, who will make out and seal the letters of administration, and return them to the County Court registrar, who is to hand them over to the owner on payment only of the fee required by this Act. Section 2 empowers the registrar of the County Court to require such proof of the identity and relationship of applicants as he may think sufficient. By section 3, the registrar is to refuse to proceed until he is satisfied that the intestate's effects do not exceed 100*l.* in value, if he has any doubt on the point. Section 4 empowers a registrar of County Courts to exercise the powers of commissioners of the Probate Court for the carrying out of the Act, and in his absence applicants may be sworn at his office before any commissioner of the Probate Court. Section 5 provides that any rules, orders, or table of fees under the Act, are to be framed and may be altered by the judge of the Probate Court, the fees being subject to the approval of the Treasury, and such proportions of the fees are to be paid to the registrar of the County Court as the said judge may think fit, provided that the total amount charged to the applicant does not exceed the sums mentioned in the schedule. Section 6 provides that nothing in the Act is to be construed as affecting any duty now payable on letters of administration. Section 7 applies the Act to Ireland, substituting for "the registrar of the County Court" the "registrar of the Civil Bill Court," and the Court of Probate being held to mean the Court of Probate in Dublin. The schedule fixes the fees payable by applicants under the Act at the following rates:—Where the whole estate and effects of the intestate shall not exceed in value 20*l.*, the sum of 5*s.*; and where the whole estate and effects shall exceed in value, 20*l.*, the sum of 5*s.*, and the further sum of 1*s.* for every 10*l.* or fraction of 10*l.* by which the value shall exceed 20*l.*

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5. TRADE AND SHIPPING.

MERCHANT SHIPPING.

[36 and 37 Victoriæ, cap. 85.—5th August, 1873.]

An Act to Amend the Merchant Shipping Acts.

This Act is to be construed as one with the Merchant Shipping Act of 1854, and the Acts amending the same. Section 3 provides for

the marking of British ships with name, number, and scale, showing their draught of water in a conspicuous place, and provides penalties for non-compliance. By section 5 the record of the draught of water required by the Act of 1871 is also to specify the extent of a ship's clear side in feet and inches. Section 5 supplies rules as to foreign ships placed on the British register, and section 6 places restrictions on the re-registration of abandoned ships. Sections 7 to 9 contain provisions with reference to agreements between shipowners, and seamen, or fishermen, as to compensation to seamen for unnecessary detention on charge of desertion. Section 10 empowers the Board of Trade in cases where there is no local marine board, to establish offices for an examination of, and granting certificates to masters, mates, and engineers. Section 12 empowers the Board of Trade to appoint persons to survey and report on ships suspected of being unseaworthy, and provides for the detention of such ships. Section 13 provides that the cost of the survey shall be paid by the owner, if the ship was unfit for the service for which she was intended. Section 14 enables an owner to appeal to courts having Admiralty jurisdiction, who may authorise a re-survey. The remaining sections give the Board of Trade powers as to the number of boats and life-saving apparatus to be carried; regulate the duties of masters in cases of collision, and contain provisions as to the carriage of dangerous goods. The schedules contain descriptions of signals to be made by ships in distress, or ships wanting pilots, and a table of fees to be charged for surveys.

EMPLOYMENT OF CHILDREN IN AGRICULTURE.

[36 and 37 Victoriæ, cap. 67.—5th August, 1873.]

An Act to regulate the Employment of Children in Agriculture.

The preamble recites the expediency of making regulations with respect to the employment of children in agricultural work, with a view to their better education. Section 1 gives as the short title, "The Agricultural Children Act, 1873;" section 2 limits its operation to England and Wales; and section 3 fixes 1st January, 1875, as the date on which it is to come into operation. Section 4 defines the terms used in the Act. "A child," is to mean a child under twelve years of age; a "certificated child," is to mean one for whom a certificate has been obtained under the Act; "parent," is to mean the parent or guardian who has actual control and custody over the child; "school," is to mean a school recognized by the Privy Council as giving efficient elementary education, or, if there be none within two miles, any elementary school, including a pauper school; "school attendance," is to mean attendance, either morning or afternoon, during the whole time devoted to secular instruction; "employer," is to mean any person occupying not less than one acre of land; "agent," is to mean any person acting on an employer's behalf; "Summary Jurisdiction Acts," apply to 11 and 12 Vic., c. 43; and "Courts of Summary Jurisdiction," refer to courts with powers under that Act. Section 5 renders it illegal after the passing of the Act, for any person, other than the father of the child employing it on his own land, to employ a child under eight years of age in agricultural work. Section 6 restricts the employment of children over

eight to those who are certificated under the Act. The certificate contained in the schedule, which is only to be in force for twelve months from date of issue, is to specify the age on last birthday, and that the child, if under ten, has completed 250 school attendances within the preceding twelve months. Section 7 requires teachers to give certificates of school attendances, and renders it an offence under the Act to refuse to do so. Section 8 empowers the Court of Summary Jurisdiction in any petty sessional division, on the written application of a person holding not less than 300 acres, to suspend the restrictions imposed by the Act for any period of not more than eight weeks in the year, the notice of such suspension being affixed to the door of the principal church, and otherwise advertised. Section 9 enables the court to exempt a child from any of the required number of school attendances in case of illness, their order of exemption being of equal force to a certificate of attendance. By section 10, employers are not to be liable under the Act for employing uncertificated children in hay or corn harvest, or in hop-picking or other agricultural work, if it is proved that during the preceding twelve months the child was unable to attend school owing to the absence of any school, or that the school was closed for holidays, or other cause, at the time of the employment. By section 11, children certified by a Government inspector to have reached the fourth standard of education as prescribed by the Education Department, and children detained in reformatory and industrial schools, are exempt from the operation of the Act; sections 12, 13, 14, and 15, provide for the punishment of persons employing children in contravention of the Act, of persons forging certificates and of others offending against the Act.

RAILWAY AND CANAL TRAFFIC.

[36 and 37 Victoriæ, cap. 48.—21st July, 1873.]

An Act to make better provision for carrying into effect the Railway and Canal Traffic Act, 1854, *and for other purposes connected therewith.*

This Act, which by section 1 is to be cited as the Regulation of Railways Act, 1873, came into operation on the 1st of September, 1873. Section 3 defines the terms used in the Act. Section 4 creates a tribunal composed of three Commissioners; and, in the first place, they have, by section 6, jurisdiction to entertain any complaints of anything done or of any omission made in violation or contravention of section 2 of the Railway and Canal Traffic Act, 1854, and of section 16 of the Regulation of Railways Act, 1868, or of any enactment amending or applying those enactments. Section 2 of the Act of 1854 defines the duties of railway companies in making arrangements for receiving and forwarding traffic without unreasonable delay and without partiality; and section 16 of the Act of 1868 makes provision for securing equality of treatment where railway companies work steam-vessels. Private persons or the Board of Trade may apply to the Commissioners, and in carrying out their jurisdiction they are given all the powers conferred on the courts and judges by section 3 of the Act of 1854. Section 6 of the new Act then gives them power to make orders of like nature with the writs and orders authorised by the Act of 1854 to be issued and made by

the courts and judges. By section 7 of the Act the Commissioners are empowered to give railway and canal companies against whom a complaint is made of infringing any Acts of Parliament opportunities to explain such alleged violation of the law. Differences between railway companies are referred to the Commissioners by section 8, and they may act at the instance of any party to the difference, but the powers of compulsory arbitration are not to be exercised where by any general or special Act an arbitrator has been appointed. By section 9, any difference to which a railway or canal company is a party may be referred to the Commissioners. Working agreements between railway companies are the subject of section 10, and hereon the powers of the Board of Trade, under Part III of the Railway Clauses Act, 1863, or any special Act, are transferred to the Commissioners, as also are the powers and duties of the Board of Trade under section 35 of the Act of 1863 with respect to the exercise by railway companies of their powers in relation to steam-vessels. The amendment of section 2 of the Act of 1854 is contained in section 11 of this Act, by which, subject to certain conditions, the facilities directed to be afforded by the companies by the Act of 1854 are declared to include the due and reasonable receiving, forwarding, and delivering by every railway company and canal company, and every railway and canal company at the request of any other such company, of through traffic to and from the railway or canal of any company, at through rates, tolls, or fares. By section 13, it is provided that a complaint of the contravention of section 2 of the Act of 1854 as amended by the present Act may be made to the Commissioners by a municipal or other public corporation, local or harbour board, without proof that the complainants are aggrieved by the contravention. But the complaint must be accompanied by a certificate of the Board of Trade approving of the application. Section 14 directs the publication of rates; and by section 15 the Commissioners are empowered to fix terminal charges. The 16th section of the Act gives the Commissioners an important control over agreements between railway companies and canal companies, and provides that any agreement entered into after the commencement of the Act, whereby any control or right to interfere in or concerning the traffic carried, or tolls levied on any part of a canal is given to the railway company, or any persons managing or connected with the management of any railway, without the approval of the Commissioners first obtained, shall be void. And the Commissioners are directed to withhold their sanction from any such agreement which is, in their opinion, prejudicial to the interests of the public. Provisions are contained in this section for due notification and publication of any proposed agreement. The 17th section relates to the maintenance of canals by railway companies. Sections 18 to 20 relate to the conveyance of mails. Sections 21 to 31 contain the regulations as to the duties of the Commissioners, and their powers. The Commissioners (by section 21) may appoint assistant commissioners to make inquiries and reports, and perform such other acts and services as the Commissioners may direct. These assistant commissioners are also empowered to undertake such arbitration under the Act as the Commissioners, with the consent of the parties to such arbitration, may direct. And for these purposes the assistant commissioners are given all the powers of the Commissioners. Further (by section 23), the Commissioners are empowered,

with the consent of the Treasury, to call in the aid of one or more assessors—persons of engineering or other technical knowledge. The powers vested in the Commissioners' Court by section 25 embrace the decision of all questions of law or of fact. Moreover, they may, by themselves, or by any person appointed by them, prosecute an inquiry, enter and inspect any place or building, being the property or under the control of any railway or canal company, the entry or inspection of which appears to them requisite; they may require the attendance of all such persons as they think fit to call before them and examine, and may require answers or returns to such inquiries as they think fit to make; they may require the production of all books, papers, and documents relating to the matters before them; they may administer an oath; and they may, when sitting in open court, punish for contempt in like manner as if they were a court of record. Any decision or order made by the Commissioners may, by section 26, be made a rule or order of any superior court, and two modes of enforcing them are given—either as rules of court are ordinarily enforced, or in the manner directed by section 3 of the Act of 1854. That section provides that, in case of disobedience of any writ of injunction or interdict, a writ of attachment should issue against any one or more of the directors of any company, or against any owner, lessee, or contractor, or other person failing to obey such writ or injunction or interdict, the court or judge being further empowered to inflict a fine for every day during which such disobedience shall continue. The Commissioners may vary or rescind any order made by them, and at the instance of any party, and upon security being given by the appellant, they shall state a case in writing for the opinion of any superior court determined by the Commissioners upon any question which in the opinion of the Commissioners is a question of law. They may, by section 27, sit together or separately, in private or in open court, but any complaint made to them shall, on the application of any party to the complaint, be heard and determined in open court. Section 28 leaves the costs of and incidental to any proceeding before the Commissioners to be fixed at their discretion. Section 29 empowers them to make general orders. By section 30, every document purporting to be signed by the Commissioners, or any one of them, shall be received in evidence without proof of such signature, and, until the contrary is proved, shall be deemed to have been so signed, and to have been duly executed or issued by the Commissioners. Under section 31, the Commissioners are, once in every year, to make a report to Her Majesty of their proceedings under this Act during the past year, and such report is to be laid before both Houses of Parliament within fourteen days after the making thereof if Parliament is then sitting, and if not, then within fourteen days after the next meeting of Parliament. Among the miscellaneous provisions, section 32 empowers the Commissioners, at any time after the passing of this Act, by general order, with the concurrence of the Treasury, to appoint the fees to be taken in relation to proceedings before them, and from time to time, by general order, with the like concurrence, to increase, reduce, or abolish all or any of such fees, and appoint new fees to be taken in relation to such proceedings. Under section 33, the Public Offices Fees Act, 1866, is to apply to all fees taken in relation to any proceedings before the Commissioners. Any fee or payment in the nature or in lieu of a fee paid in respect of

any proceedings before the Commissioners, and collected otherwise than by means of stamps, is to be paid into the receipt of Her Majesty's Exchequer in such manner as the Treasury from time to time direct, and carried to the Consolidated Fund. Section 34 provides for the taxing of costs, and section 35 refers to the issue of notices under the Act.

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6. LOCAL GOVERNMENT.

FAIRS.

[36 and 37 Victoriæ, cap. 37.—7th July, 1873.]

An Act to amend the Law relating to Fairs in England and Wales.

The second section limits the operation of this Act to England and Wales; the third defines the term "owner" as used in the Act, to include all persons or body of persons entitled to hold a fair, whether in respect to ownership of lands or tenements, or under charter, letters patent, or any other way; the fourth puts the Act in force from the date of its passing; and the fifth repeals the Fairs Act of 1868, from the date on which this Act becomes law. Section 6 empowers one of Her Majesty's Principal Secretaries of State, to alter the day or days on which the fair is held, upon the representation of the justices in the petty sessional division within which the fair is held that such a proceeding would be for the convenience or advantage of the public, due notice of such representation and of the date when it will be considered having been given to the owner of the fair, or, if the owner have made the representation, to the clerk to the justices. The notice is also to be published once in the *London Gazette*, and for three successive weeks in one and the same local newspaper in the district where the fair is held, or the nearest district if there be no paper published there. By section 7, notice of the alteration, after the order has been made by the Secretary of State, is to be published in the same way in the *Gazette* and the local papers, and from that date such fair shall only be held on the day or days mentioned in such order; and it shall be lawful for the owner of such fair to take all such toll or tolls, and to do all such act or acts, and to enjoy all and the same rights, powers, and privileges in respect thereof, and enforce the same by all and the like remedies, as if the same were held on the day or days upon which it was used to be held previous to the making of such order.

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7. MISCELLANEOUS.

TELEGRAPHS.

[36 and 37 Victoriæ, cap. 83.—5th August, 1873.]

An Act for explaining the Telegraph Acts 1868 *to* 1871, *and for enabling a further Sum to be raised for the purposes of the said Acts, and of the Pensions Commutation Act*, 1872.

By the recited statutes the Treasury were authorised to raise a sum not exceeding 8,000,000*l.* for purchasing, working, maintaining, and

extending telegraphs. Under the Act of 1869, it was stated that the gross revenue received by the Postmaster-General for the transmission of messages by means of electric telegraphs was to be paid into the Exchequer to the account of the Consolidated Fund, and that the expenses incurred in working, maintaining, and extending telegraphs were to be paid out of moneys provided by Parliament. And whereas an estimated sum of about 812,800*l.*, part of the Post Office revenue, which ought to have been paid into the Consolidated Fund, has been improperly expended for the purposes of the said Telegraph Acts, and it is necessary that funds should be provided to make good to the said fund the sum so improperly diverted from it, it was therefore expedient to provide further funds for the purpose of the Telegraph Acts and of the Pensions Commutation Act of 1872. The Treasury may, in addition to the sum previously authorised, raise 1,250,000*l.* for the Telegraph Acts, of which 812,000*l.* is to be devoted to make good the amount improperly diverted to the 31st of March last, 120,000*l.* expenses of extensions in course of payment previous to the 31st of October next, 87,200*l.* cost of undertakings to be purchased, and 230*l.* commutation of pensions.

SALMON FISHERIES.

[36 and 37 Victoriæ, cap. 71.—5th August, 1873.]

An Act to Amend the Law relating to Salmon Fisheries in England and Wales.

This Act which is to be construed together with the statute of 1861, contains 65 sections and three schedules, referring to fishery districts, restrictions as to certain modes and times of taking and selling fish, licenses, constitution of Boards of Conservators, powers of water bailiffs, bye-laws, weirs and fish-passes, gratings preventing fish entering water, crosses, and legal proceedings. The Secretary of State is empowered after notice to alter any fishery district, and he has power to alter the number of conservators appointed. Where any person is convicted for an offence, the clerk of the peace is to send notice to the Board of Conservators of the district, and in default of such certificate to be liable to a penalty of not exceeding 2*l.* For the purposes of the Salmon Fishery Acts 1861 to 1873, the Commissioners of Supply in Scotland are to have all the privileges and duties of the Justices in Quarter Sessions in England for the election of Conservators for the River Esk. The provisions of the Malicious Injuries Act, so far as they relate to poisoning any water with intent to kill or destroy fish, are to apply to salmon rivers. No draught net is to be shot within 100 yards of another net until the latter is landed, nor are eel baskets to be fixed between the 1st of January and the 24th of June, and no interference with salmon to be allowed in close seasons; no fishing except with rod and line to be permitted above 100 yards or below a weir or mill races. After various regulations as to penalties for taking or selling salmon in prohibited periods, it is enacted that "no person shall buy, sell, or have in his possession any salmon or part of any salmon, between the 3rd of September and the 1st of February following, both inclusive, subject to penalties, with certain specified exceptions."

ABSTRACTS OF PARLIAMENTARY AND OTHER OFFICIAL DOCUMENTS.

1. FINANCE, TAXATION, AND CURRENCY.

NATIONAL REVENUE AND EXPENDITURE.—The subjoined Tables show the GROSS PUBLIC REVENUE and EXPENDITURE of the United Kingdom in the Financial Year ended the 31st of March, 1873:—

SOURCES OF REVENUE:—	£
Customs	21,033,000
Excise	25,785,000
Stamps	9,947,000
Land Tax and House Duty	2,337,000
Property and Income Tax	7,500,000
Post Office	4,820,000
Telegraph Service	1,015,000
Crown Lands (Net)	375,000
Miscellaneous, viz.:—Military and Naval extra Receipts; Army Contributions from India; and War Indemnities	1,885,863
Surplus Fees, Extra Receipts, Civil Departments, Unclaimed Dividends, &c.	1,910,907
Total Income	76,608,770

BRANCHES OF EXPENDITURE:—	
Debt:—	£
Interest of the Permanent Debt and Management	22,196,393
Terminable Annuities	4,539,548
Interest of Unfunded Debt, &c.	128,912
Civil List and Civil Charges of all kinds	12,883,197
Supply Services:—	
Army, including Ordnance	14,729,700
Army, Abolition of Purchase	8,683,500
Navy, including Transport Service	9,543,000
Charges of Collection of Revenue	6,070,198
Total Ordinary Expenditure	£70,714,448
Expense of Fortifications	308,000
Total Expenditure	£71,022,448
Ordinary surplus of Income over Expenditure (deducting Expenses of Fortifications)	£5,884,322

	£
Income for year estimated in Budget	71,846,000
Actual Income at the Exchequer	76,608,770
Excess of Income over Budget Estimate	£4,762,770

CUSTOMS AND EXCISE.—The Produce of the two great sources of PUBLIC REVENUE, CUSTOMS and EXCISE, which together contribute considerably more than One-Half to the NATIONAL INCOME of the UNITED KINGDOM, was as follows in the financial year ending March 31, 1873, the sums representing Gross Receipts:—

CUSTOMS DUTIES on Articles usually contributing not less than £1,000 Annually.	Gross Receipts. £	s.	d.
Beer Spruce	2,419	16	9
—— Of other Sorts, including Mum	976	5	3
Chicory	62,822	7	11
Cocoa, Cocoa Husks, and Chocolate	35,655	12	10
Coffee	207,041	10	3
Currants	318,708	11	6
Figs	37,989	10	10
Ginger, Preserved	1,353	2	11
Plate, Gold, and Silver	4,971	12	8
Plums, Dried or Preserved, French Plums and Prunelloes	2,734	13	7
Prunes	8,001	0	1
Raisins	153,692	4	2
Spirits, Colonial and Foreign:—			
Rum	2,371,002	13	7
Brandy	2,088,073	13	5
Geneva	95,261	17	8
Of other sorts	330,859	14	7
Succades and Confectionery, including Fruits and Vegetables preserved in Sugar	8,052	17	3
Sugar, Unrefined	2,914,157	12	2
—— Refined, and Sugar Candy	558,481	18	11
—— Molasses	37,282	7	5
Tea	3,194,951	6	2
Tobacco and Snuff	7,104,616	3	2
Wine	1,689,449	12	8
All other Articles	6,722	11	11
	£21,235,278	17	8

Duties collected on behalf of the Inland Revenue on the delivery for Home Consumption of British Spirits deposited in the Customs Warehouses (under Act 27 & 28 Vict., c. 11):			
Receipt	2,827,831	16	3
Charges on delivery from the Bonded Warehouses	39,683	6	8
Duties collected at the Isle of Man	42,273	15	8
Total	£24,145,067	16	3

CUSTOMS DUTIES, contd.	Gross Receipts. £	s.	d.
Deductions on account of Drawbacks, Repayment on Over Entries, &c.	3,112,735	19	2
Net Produce	£21,032,331	18	1

EXCISE DUTIES.	Gross Receipts. £	s.	d.
Chicory	6,646	14	6¾
Licences, viz.:			
Auctioneers, Appraisers, &c.	65,126	0	0
Beer, Cider, and Perry	363,638	8	5½
Brewers	471,293	12	9
Dog	302,153	10	0
Establishment, viz.:			
Armorial Bearings	85,789	9	0
Carriages	543,129	13	0
Horses	474,813	1	6
Male Servants	214,841	15	0
Game	186,022	0	0
Gold and Silver Plate	36,469	1	9
Gun	63,393	0	0
Hawkers and Pedlars	20,337	16	0
Horse Dealers	19,925	0	0
Maltsters	16,277	3	1½
Medicine Vendors	7,283	15	0
Pawnbrokers	35,160	0	0
Refreshment House	5,537	0	1½
Spirit (Distillers, Dealers, and Publicans)	760,430	18	2¾
Tobacco	84,959	0	3½
Wine and Sweets	200,442	16	5
Other than the foregoing	5,062	9	2¼
Malt	7,788,269	12	2½
Race Horses	8,720	5	0
Railways	507,079	0	5½
Spirits	14,205,620	0	0
Sugar	153,893	5	7¾
Total Excise	£26,632,314	7	8¼
Drawbacks, Discounts and Allowances	£727,864	14	9½
Net Produce	£25,904,449	12	9¾

STAMPS.—The following table gives the gross receipts from Stamps in the United Kingdom during the financial year ended the 31st of March, 1873:—

Heads of Duty.	Gross Receipts. £	s.	d.
Deeds and other Instruments, not included under the following heads	1,970,713	18	3
Probates of Wills and Letters of Administration	2,074,656	13	1

Heads of Duty.	Gross Receipts. £	s.	d.
Bills of Exchange . .	972,266	3	0
Bankers' Notes . . .	1,656	0	10
Composition for the Duties on the Bills and Notes of the Banks of England and Ireland, and of Country Bankers .	141,945	7	6
Receipts, Drafts and other 1*d.* Stamps .	724,030	19	11
Marine Insurances . .	119,944	11	9
Licences and Certificates	134,991	10	0
Medicine	95,812	19	7½
Legacies and Successions	3,190,926	11	6
Gold and Silver Plate .	76,992	3	4
Cards	13,048	11	0
Patents for Inventions .	138,703	18	0
Arrears of Fire Insurance	42	18	2
	£9,655,732	5	11½
Fee Stamps, viz.:			
Admiralty Court . .	6,187	0	0
Bankruptcy Court . .	54,159	3	6
Chancery Court. . .	115,942	7	4
Chancery Fund . . .	4,330	15	9½
Civil Bill Fund . . .	17,328	1	6
Civil Service Commission	3,590	13	0
Coal Mines Regulation	750	0	0
Common Law Courts .	79,788	15	6
Companies Registration	23,443	4	6
Copyhold, &c., Commission	7,256	15	0
Crown Office	2,931	0	0
Divorce and Matrimonial Causes .	3,192	4	6
Great Seal Patent . .	209	0	0
Judgments Registry Fund.	3,512	14	0
Land Registry . . .	732	16	6
Law Fund.	9,990	17	8
London Gazette . .	22,880	5	0
Lord Chancellor's Presentation . .	439	0	0
Naturalisation . . .	405	10	0
Probate Court . . .	150,125	16	6
Public Record . . .	639	5	0
Record of Title . . .	28	16	0
Register House, Scotland	46,985	18	3
Registration of Deeds.	12,066	3	2
	£566,916	2	8½
Gross Total . .	£10,222,648	8	8
Drawbacks, Discounts, Allowances, &c. .	£224,615	9	9
Net Produce . .	£9,998,032	18	11

NATIONAL REVENUE FROM 1857 TO 1873.—The following table shows the total gross amounts of the National Revenue in each of the sixteen financial years ended March 31, from 1857 to 1873, as well as the proportion of receipts per head of population of the United Kingdom:—

Years ended March 31.	Amounts of Revenue.	Proportion of Receipts per head of Population of United Kingdom.
	£	£ s. d.
1857	72,334,062	2 12 1
1858	67,881,513	2 8 3
1859	65,477,284	2 6 3
1860	71,089,669	2 9 10
1861	70,283,674	2 8 11
1862	69,674,479	2 8 3
1863	70,603,561	2 8 4
1864	70,208,964	2 7 7
1865	70,313,437	2 7 0
1866	67,812,292	2 5 1
1867	69,434,568	2 5 8
1868	69,600,218	2 5 6
1869	72,591,991	2 6 8
1870	75,434,252	2 8 4
1871	69,945,220	2 4 5
1872	74,708,314	2 7 3
1873	76,608,770	2 8 2

NATIONAL EXPENDITURE FROM 1857 TO 1873.—The following table exhibits the total amount of National Expenditure in each of the sixteen financial years, ended March 31, from 1857 to 1873, together with the proportion of expenditure per head of population of the United Kingdom:—

Years ended March 31.	Amounts of Expenditure.	Proportion of Payments per Head of Population of United Kingdom.
	£	£ s. d.
1857	75,588,667	2 14 4
1858	68,128,859	2 8 5
1859	64,663,882	2 5 8
1860	69,502,289	2 8 8
1861	72,792,059	2 10 8
1862	71,116,485	2 9 11
1863	69,302,008	2 8 2
1864	67,056,286	2 6 0
1865	66,462,207	2 5 0
1866	65,914,357	2 4 2
1867	66,780,396	2 4 0
1868	71,236,242	2 6 6
1869	74,972,816	2 8 6
1870	68,864,752	2 4 0
1871	69,548,539	2 4 3
1872	71,490,020	2 5 0
1873	71,022,448	2 4 5

NATIONAL DEBT.—The following table shows the annual charges on the total amount of the Unredeemed Funded Debt for the financial year ended the 31st of March, 1873:—

Great Britain.	Annual Charges. £	s.	d.
Unredeemed Capital	20,789,267	14	11¾
Annuities, per 18 Vict., c. 18, expiring 5 April, 1885	115,957	4	2
Annuities, per 23 & 24 Vict., c. 109, and subsequent Acts, expiring 5 April, 1885 (Fortifications)	456,426	0	0
Annuities, per 26 Vict., c. 14, expiring 5 April, 1885	9,983	7	3
Annuities, per 32 & 33 Vict., c. 59, and 29 Vict., c. 5, expiring at various dates in 1885 (payable yearly)	2,966,164	0	0
Annuities for a limited Term of Years, per 10 Geo. 4, c. 24, and 3 Will. 4, c. 14, expiring at various periods	45,457	10	0
Red Sea and India Telegraph Company's Annuity, 25 & 26 Vict., c. 39	36,000	0	0
Life Annuities, 48 Geo. 3, c. 142, and subsequent Acts	926,953	2	2
English Tontine Annuities, 29 Geo. 3	12,719	10	3
Management	213,809	13	10
Total at 31st March, 1872	25,572,738	2	7¾
Charges on Debt created or transferred from Ireland between 31st March 1872 and 31st March, 1873:—			
Capital transferred from the Funded Debt in Ireland to the Funded Debt in Great Britain, 5 Geo. 4, c. 53	47,761	2	8
Capitals retransferred from the Commissioners for the Reduction of the National Debt, the Dividends upon which had remained unclaimed 10 years and upwards, the same having been reclaimed by the proprietors thereof 56 Geo. 3, c. 60	1,373	17	8
	31	4	9

Great Britain, contd.	Annual Charge. £	s.	d.
Annuities for a limited Term of Years, granted per 10 Geo. 4, c. 24	1,147	18	0
Annuities (expiring 1885), granted per Acts 30 & 31 Vict., c. 145, and 32 & 33 Vict., c. 76 (Fortifications)	26,090	0	0
Annuities (expiring 29th March, 1885), granted per 35 & 36 Vict., c. 68, "The Military Forces Localization Act, 1872"	6,091	0	0
Life Annuities, granted per 10 Geo. 4, c. 24, 3 Will. 4, c. 14, 16 & 17 Vict., c. 45, and 27 & 28 Vict., c. 43	70,558	5	4
Contributors' Shares, Tontine 1789, increased	368	14	9
Annuities for Terms of Years, per 18 Vict., c. 18 (Reclaimed)	39	15	10
Total charges on Debt created or transferred in Great Britain, between 31st March, 1872, and 31st March, 1873	153,461	19	0
General Total, Great Britain	£25,726,200	1	7¾

Ireland.	Annual Charges. £	s.	d.
On 31st March, 1872:—			
On Unredeemed Capital	1,129,019	12	4½
On Management	10,500	7	7
Total at 31st March, 1872	£1,139,519	19	11½
Debt increased between 31st March, 1872, and 31st March, 1873:—			
On Capital transferred from the Funded Debt in Great Britain to the Funded Debt in Ireland, 5 Geo. 4, c. 53	31,329	8	8
On Capitals retransferred from the Commissioners for the Reduction of the National Debt, the Dividends on which had remained unclaimed 10 years or upwards, the same having been reclaimed by the proprietors, 23 & 24 Vict., c. 71	56	9	0¼

Ireland—contd.	Annual Charges. £	s.	d.
Fractions	0	0	0¼
Total charges on Debt created or transferred in Ireland, between 31st March, 1872, and 31st March, 1873	31,385	17	8½
General Total, Ireland .	£1,170,905	17	8

Summary.

	£	s.	d.
Total charge on Unredeemed Debt on 31st March, 1872:—			
Great Britain	25,572,738	2	7½
Ireland	1,139,519	19	11½
	£26,712,258	2	7¼
	£	s.	d.
Total charge on Debt created or transferred between 31st March, 1872, and 31st March, 1873:—			
Great Britain	153,461	19	0
Ireland	31,315	17	8½
	184,847	16	8½
Total	£26,897,105	19	3¾

LAND TAX, HOUSE DUTY, AND PROPERTY AND INCOME TAX.—The following table shows the receipts under these heads for the financial year ended 31st March, 1873:—

Heads of Duty.	Gross Receipts. £	s.	d.
Land Tax on Lands and Tenements . .	1,108,225	11	4¼
Duties on Offices and Pensions	217	10	0
	£1,108,443	1	4¼
Inhabited House Duty .	1,243,818	19	3
Arrears of Assessed Taxes	5	16	7½
Total . .	£2,352,267	17	2¾
Allowances and Repayments	13,234	12	7¾
Net Produce .	£2,339,033	4	7
Property and Income Tax	7,547,270	18	10
Discounts, Parliamentary Allowances, and Repayments . . .	143,534	0	10
Net Produce .	£7,403,736	18	0

COINAGE OF THE ROYAL MINT.—The real value of the coinage issued by the Royal Mint in each of the eighteen years, 1855 to 1872, was as follows:—

	Total. £
1855 ..	9,245,264
1856 ..	6,476,060
1857 ..	5,239,810
1858 ..	1,690,359
1859 ..	3,305,085
1860 ..	3,378,102
1861 ..	8,673,232
1862 ..	8,337,731
1863 ..	7,310,032
1864 ..	10,088,861
1865 ..	2,926,839
1866 ..	5,620,716
1867 ..	723,540
1868 ..	1,971,068
1869 ..	7,469,644
1870 ..	2,682,886
1871 ..	10,628,786
1872 ..	16,426,663

POLITICAL PENSIONS.—It appears from the finance accounts of the United Kingdom for the year ending, 31st of March last, that 171,139*l.* was paid during the year out of the Consolidated Fund in the form of pensions for naval and military, political, civil, judicial, and diplomatic services. The naval and military pensions amount to 38,000*l.*; the political and civil, 19,847*l.* in Great Britain and 378*l.* in Ireland; the judicial, in Great Britain to 47,763*l.* and in Ireland 19,509; the diplomatic to 15,789*l.*; in addition to which there are hereditary pensions amounting to 11,360*l.*, and miscellaneous pensions of 14,418*l.* in the United Kingdom, and 4,073*l.* in Ireland. The pensions for naval and military services, varying from 1,000*l.* to 3,500*l.* each are chiefly paid at the present time to the heirs of deceased officers, including Lord Rodney, Earl Nelson, the Duke of Wellington, Viscount Combermere, Lord Hardinge, Lord Gough, Lord Raglan, and other eminent men. The pensions for political and civil services include 4,000*l.* to Viscount Eversley, late Speaker of the House of Commons; 1,000*l.* to the Countess of Elgin and 810*l.* to the Countess of Mayo; pensions of 2,000*l.* each to Sir George Grey, Mr. Disraeli, Mr. Milner Gibson, and Mr. Walpole; 1,200*l.* to Lord Clarence Paget as ex-First Secretary to the Admiralty, and 1,000*l.* to Admiral Hamilton, late second secretary of the same department. Mr. Romaine's pension as second secretary is suspended while he receives salary as Judge Advocate-General in India. Among the pensions for judicial services, five ex-Lord Chancellors—Lord St. Leonards, Chelmsford, Westbury, Cairns, and Hatherley—were in receipt of 5,000*l.* a year, but the number is now reduced to four by Lord Westbury's death. Sir William Erle, as ex-Lord Chief Justice of Common Pleas, takes 3,750*l.*; Sir T. Coleridge, ex-judge of Queen's Bench, 3,500*l.*; Sir E. V. Williams,

ex-judge Common Pleas, 3,500*l.*; Lord Penzance, retired judge of Probate Court, 3,500*l.*; Sir R. T. Kindersley and Sir John Stuart, late Vice-Chancellors, 3,500*l.* each, and Sir S. Lushington (since deceased) received 2,000*l.* There are several county court judges in receipt of pensions of 1,000*l.* Two ex-Lord Chancellors of Ireland—Sir Joseph Napier and the Right Hon. A. Brewster—receive 3,692*l.* each, and there are several other Irish judges on the list. The diplomatic pensions include 1,786*l.* to Viscount Stratford de Redcliffe, 1,700*l.* to Earl Cowley, and 1,162*l.* to Lord Napier, K.T. The hereditary pensions are four in number, viz.:—4,000*l.* to the Duke of Marlborough, 2,160*l.* to the heirs of the Duke of Schomberg, 1,200*l.* to the Earl of Bath, and 4,000*l.* to the heirs and descendants of William Penn "for ever." Among the miscellaneous pensions we find the servants of Queen Charlotte receive 358*l.*; of George III., 14*l.* 10*s.*; of Queen Caroline, 60*l.*; and of George IV. and William IV., 13,984*l.* Among the miscellaneous pensions in Ireland there is an entry of 32*l.* to persons who suffered by the rebellion in 1798. The annuities to the Royal family charged on the Consolidated Fund for the financial year amount to 132,000*l.*, bringing the gross amount for annuities and pensions up to 303,139*l.*

LOANS FOR PUBLIC WORKS.—Loans of considerable amount were made from the public purse in the financial year 1872–73 for aiding the prosecution of public works. The Public Works Loan Commissioners report loans of 293,758*l.* to School Boards under the Elementary Education Act; 129,500*l.* under the Harbours and Passing Tolls Act of 1861; 50,000*l.* for canals, rivers, and drainage; 21,568*l.* for workhouses; 20,350*l.* for law courts, gaols, and other public buildings; 16,000*l.* to burial boards. These Commissioners advanced 560,937*l.* in all in the year, and previous advances were repaid in the year amounting, with the interest, to 765,066*l.*; the loans outstanding exceed 8 millions in all. The Commissioners of Public Works in Ireland made advances amounting to 182,937*l.* in the year: 78,000*l.* to tenants for purchase of their farms, and to landlords for reclaiming waste lands and compensating tenants for improvements and for disturbance; 76,290*l.* for improvements of lands by drainage, erection of farm buildings and labourers' dwellings, planting for shelter, &c.; 13,962*l.* for glebe loans. The repayments in the year of former loans amounted to 152,664*l.* The Paymaster-General also reports, among loans for public works in Ireland not under the Commissioners of Public Works, 202,745*l.* advanced for lunatic asylums in the year 1872–73; sums amounting to 182,130*l.*, former advances, were repaid in the year, leaving nearly a million and a half still outstanding. The advances made by the Irish Public Works Commissioners have reached, in all, nearly 12 millions; principal has been repaid amounting, with interest, to nearly 7 millions, and nearly 6 millions have been remitted, the chief item being 4¼ millions which had been advanced for the employment of the labouring poor under the Acts of 1846 and 1847.

2. GENERAL COMMERCE AND NAVIGATION.

NAVIGATION RETURNS.—The subjoined table shows the tonnage of British and Foreign vessels (sailing and steam) entered and cleared, *with cargoes*, at ports in the United Kingdom, from and to foreign countries and British Possessions, from 1858 to 1872:—

Years.	Entered.			Cleared.		
	British.	Foreign.	Total.	British.	Foreign.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1858 ..	5,234,424	3,583,113	8,817,537	5,879,906	4,062,518	9,942,424
1859 ..	5,391,925	3,698,718	9,090,643	6,222,746	4,021,217	10,243,963
1860 ..	5,760,537	4,294,444	10,054,981	6,358,917	4,424,020	10,782,937
1861 ..	6,307,737	4,297,442	10,605,179	6,841,808	4,477,996	11,319,804
1862 ..	6,591,654	4,149,154	10,740,808	7,400,454	4,309,395	11,709,849
1863 ..	7,302,039	3,835,319	11,137,358	7,961,008	3,926,797	11,887,805
1864 ..	7,813,179	3,488,931	11,302,110	8,596,234	3,576,540	12,172,774
1865 ..	8,356,914	3,801,780	12,158,694	9,056,729	3,770,422	12,827,151
1866 ..	9,215,820	4,061,370	13,277,190	9,954,147	4,055,947	14,010,094
1867 ..	9,356,814	3,984,634	13,341,448	10,586,058	4,261,523	14,847,581
1868 ..	9,572,450	4,279,207	13,851,657	10,902,171	4,570,848	15,473,019
1869 ..	10,042,182	4,444,518	14,486,700	11,313,757	4,603,227	15,916,984
1870 ..	10,308,952	4,601,790	14,910,742	11,934,087	4,779,851	16,713,938
1871 ..	11,250,120	5,205,222	16,455,342	13,396,583	5,650,872	19,047,455
1872 ..	12,139,805	5,766,135	17,905,940	13,574,471	5,673,881	19,248,352

IMPORTS INTO THE UNITED KINGDOM.—The following table gives the quantities of the chief articles imported into the United Kingdom in the year ended the 31st of December, 1872:—

Imports.		
Animals:—		
Oxen, Bulls, Cows, and Calves	No.	172,993
Sheep and Lambs	,,	809,822
Bacon and Hams	Cwts.	2,001,855
Beef	,,	228,912
Bones, except Whalefins	Tons	111,692
Brimstone	Cwts.	1,001,021
Bristles	Lbs.	3,068,095
Butter	Cwts.	1,138,081
Candles, Stearine	,,	106,270
Caoutchouc	,,	157,114
Cheese	,,	1,057,833
Clocks	No.	374,241
Cocoa	Lbs.	15,044,134
Coffee	,,	166,269,052
Corn, Wheat	Cwts.	42,127,726
—— Barley	,,	15,046,566
—— Oats	,,	11,537,325
—— Maize	,,	24,532,670
—— Other kinds	,,	4,521,011
—— Flour of Wheat	,,	4,388,136
—— —— Of other kinds	,,	42,800
Total of Corn	,,	102,196,234
Cotton, Raw	,,	12.578,906
Dyeing (or Tanning) Stuffs:—		
Cochineal, Granilla, and Dust	Cwts.	39,132
Cutch and Gambier	Tons	26,777
Garancine	Cwts.	43,313
Indigo	,,	87,320
Madder	,,	134,207
Madder Root	,,	109,352
Shumach	Tons	14,614
Valonia	,,	32,481
Eggs	No.	531,591,720
Fish	Cwts.	671,192
Flax and Hemp:—		
Flax, Dressed and Undressed	,,	1,695,644
Tow or Codilla of Flax and Hemp	,,	380,243
Hemp and other like Substances (except Jute), Dressed and Undressed	,,	1,115,946
Jute	,,	4,041,018
Fruits:—		
Currants	,,	1,138,853
Raisins	,,	617,418
Oranges and Lemons	Bush.	2,385,160
Glass of all Kinds	Cwts.	688,156
Guano	Tons	118,704
Gutta-percha	Cwts.	44,597
Hair:—		
Goats' Hair or Wool	Lbs.	6,404,490
Hides, Tanned and Untanned	Cwts.	1,679,108
Hops	,,	135,965
Lard	,,	579,056

Imports.		
Leather Gloves	Pairs	12,632,604
Metals:—		
Copper Ore and Regulus	Tons	72,435
Copper, Unwrought and part Wrought, and old Copper	Cwts.	968,000
Iron, in Bars, Unwrought	Tons	82,371
Iron and Steel Wrought or Manufactured	Cwts.	781,966
Lead, Pig and Sheet	Tons	69,841
Silver Ore	,,	14,406
Tin, in Blocks, Ingots, Bars, or Slabs, and Regulus	Cwts.	166,840
Zinc, Crude, in Cakes	Tons	15,761
—— Manufactures	Cwts.	247,131
Oil, Fish	Tuns	18,719
— Palm	Cwts.	1,006,497
— Cocoa Nut	,,	433,883
— Olive	Tuns	24,025
— Seed	,,	20,084
— Turpentine	Cwts.	220,292
Oil Seed Cake	Tons	134,300
Paper, for Printing or Writing	Cwts.	205,510
Petroleum, Unrefined	Galls.	729,036
—— Refined	,,	5,670,674
Pork	Cwts.	218,260
Potatoes	,,	5,987,429
Pyrites of Iron or Copper	Tons	517,626
Rags and Paper-making Materials:—		
Rags	Tons	22,254
Esparto and other Materials	,,	115,157
Rice, not in the Husk	Cwts.	7,033,361
—— In the Husk	Qrs.	27,447
Rosin	Cwts.	919.494
Saltpetre	,,	307,034
—— Cubic Nitre	,,	1,594,197
Seeds:—		
Clover and Grass	,,	290,849
Cotton	Tons	167,904
Flax and Linseed	Qrs.	1,514,947
Rape	,,	246.549
Silk Knubs or Husks and Waste	Cwts.	33,866
Silk, Raw	Lbs.	7,302,083
—— Thrown	,,	63,001
Skins:—		
Sheep and Lamb, Undressed	No.	8,219,014
—— Tanned, Tawed or Dressed	,,	2,824,072
Seal, in the Hair, Undressed	,,	657,697
Goat, Undressed	,,	1,132,054
—— Tanned, Tawed or Dressed	,,	4,605,266
Spices:—		
Cinnamon	Lbs.	1,072,080
Pepper	,,	27,576,710
Of all other sorts	,,	13,064,519
Spirits:—		
Rum	Pf. Gals.	6,537,273
Brandy	,,	3,505,295

Imports.

Other Foreign and Colonial Spirits	Pf. Gals.	1,701,842
Total of Spirits. . .	,,	11,744,410
Sugar, Refined and Sugar Candy. . .	Cwts.	1,729,302
—— Raw	,,	13,776,696
—— Molasses . . .	,,	696,615
Tallow and Stearine .	,,	1,328,444
Tea	Lbs.	184,927,148
Teeth, Elephants', Sea-Cow, and Sea Horse	Cwts.	11,229
Tobacco, Manufactured, Cigars, and Snuff	Lbs.	3,667,585
—— Unmanufactured	,,	45,549,700
Wine	Gals.	19,660,127
Wood and Timber :—		
Hewn	Loads	1,789,576
Sawn or Split . . .	,,	3,093,933
Staves.	,,	66,277
Mahogany	Tons	33,920
Wool,—Sheep, Lamb, Alpaca, and the Llama Tribe . .	Lbs.	306,379,664
Woollen Rags	Tons	29,302
Woollen and Worsted Yarn :—		
Berlin Wool and Yarn used for Fancy Purposes.	Lbs.	423,563
Yarn for Weaving. .	,,	11,706,427
Yeast, Dried	Cwts.	140,191

EXPORTS OF HOME PRODUCE FROM THE UNITED KINGDOM.—The following table shows the quantities of the chief articles of British and Irish produce and manufactures exported from the United Kingdom in the year ended the 31st of December, 1872 :—

Exports.

Alkali	Cwts.	4,453,068
Animals: Horses . .	No.	3,389
Arms and Ammunition :—		
Firearms (Small) . .	No.	390,697
Gunpowder	Lbs.	19,889,628
Bags, Empty	Dozs.	3,685,092
Beer and Ale	Brls.	522,080
Books, Printed . . .	Cwts.	81,422
Butter	,,	54,454
Candles, of all sorts . .	Lbs.	6,767,013
Carriages, Railway . .	No.	2,408
Cement	Cwts.	4,107,869
Cheese	,,	19,440
Coals, Cinders, and Fuel	Tons	13,198,494
Cordage and Twine .	Cwts.	139,080
Corn: Wheat	,,	532,977
—— Wheat Flour .	,,	37,935
Cotton Yarn	Lbs.	212,327,972

Exports.

Cotton Manufactures :—		
Piece Goods, White or Plain . . .	Yds.	2,379,968,019
—— Printed, Checked, or Dyed	,,	1,137,625,766
——, of Mixed Materials . . .	,,	20,391,526
Total of Piece Goods .	,,	3,537,985,311
Stockings	Doz. Prs.	1,182,685
Thread for Sewing . .	Lbs.	8,043,856
Fish: Herrings . . .	Brls.	631,750
Glass: Plate	Sq. Ft.	2,131,924
—— Flint	Cwts.	113,004
—— Common Bottles	,,	760,836
—— Of other Sorts .	,,	128,658
Hats of all Sorts . . .	Dozs.	583,191
Leather, Tanned, Unwrought	Cwts.	139,019
—— Wrought, Boots, and Shoes . . .	Dozs. Prs.	579,130
—— Of other Sorts . .	Lbs.	1,937,604
Linen and Jute Yarn:		
Linen Yarn	,,	31,187,051
Jute Yarn	,,	12,715,969
Linen and Jute Manufactures :—		
Linen Manufactures :		
White or Plain. . .	Yds.	233,838,338
Printed, Checked, or Dyed . . .	,,	7,397,940
Sailcloth and Sails .	,,	3,783, 126
Total of Piece Goods	,,	245,019,404
Thread for Sewing . .	Lbs.	2,641,732
Jute Manufactures . .	Yds.	84,452,457
Metals :—		
Iron, Old, for remanufacture . .	Tons	107,521
—— Pig, and Puddled.	Tons	1,331,143
—— Bar, Angle, Bolt, and Rod .	,,	313,600
—— Railroad, of all Sorts . . .	,,	945,420
—— Wire	,,	33,540
—— Hoops, Sheets, and Boiler Plates.	,,	207,495
—— Tinned Plates .	,,	118,083
—— Cast or Wrought, and all other manufactures	,,	269,607
—— Steel, unwrought	,,	44,969
—— Manufactures of Steel, or of Steel and Iron combined . . .	,,	11,384
Total of Iron and Steel	,,	3,382,762
Copper, Unwrought :—		
Ingots, Cakes or Slabs.	Cwts.	295,745

Exports.

Copper, Wrought or partly Wrought:—		
Mixed or Yellow Metal	Cwts.	209,644
Of other Sorts	,,	181,368
Brass of all Sorts	,,	69,034
Lead, Pig, Sheet and Pipe	Tons	44,330
Tin, Unwrought	Cwts.	113,871
Zinc, Wrought and Unwrought	,,	100,940
Oil, Seed	Gals.	11,071,740
Paper (other than Hangings)	Cwts.	303,293
Salt	Tons	753,581
Silk Manufactures:—		
Broad Piece Goods	Yds.	4,417,240
Soap	Cwts.	233,736
Spirits, British	Galls.	1,807,456
Sugar, Refined	Cwts.	632,341
Wool, Sheep and Lambs	Lbs.	7,605,146
Woollen and Worsted Yarn	,,	39.734,924
Woollen and Worsted Manufactures:—		
Cloths, Coatings, &c., Unmixed and Mixed	Yds.	40,734,224
Flannels, Blankets, Blanketing, and Baizes	,,	15,022,122
Worsted Stuffs, Unmixed and Mixed	,,	344,968,689
Carpets and Druggets	,,	11,815,900

EXPORTS OF FOREIGN AND COLONIAL PRODUCE FROM THE UNITED KINGDOM.—The following table gives the quantity of the exports of foreign and colonial merchandize from the United Kingdom, in the year ended the 31st of December, 1872:—

Bark, Peruvian	Cwts.	19,038
Caoutchouc	,,	60,561
Chemical Manufactures and Products	Value,	£170,725
Cocoa	Lbs.	5,912,964
Coffee	,,	158,669,742
Corn, Wheat	Cwts.	213,179
—— Wheatmeal or Flour	,,	11,119
Cotton, Raw	,,	2,437,545
Cotton Manufactures:—		
Piece Goods	Pieces	310,575
Other Articles	Value	£135,219
Drugs, Unenumerated	,,	286,709
Dyeing Stuffs:—		
Cochineal, Granilla, and Dust	Cwts.	23,202
Indigo	,,	61,802
Madder	,,	2,747
Madder Root	,,	1,833
Flax and Hemp:—		
Flax, Dressed and Undressed	,,	49,254
Tow or Codilla of Hemp and Flax	,,	40,160
Hemp and other like Substances (except Jute), Dressed and Undressed	Cwts.	181,985
Jute	,,	755,120
Fruit:—		
Currants	,,	100,781
Raisins	,,	55,273
Guano	Tons	6,274
Hair, Manufactures of, and of Goats' Wool	Val. £	18,155
Hides, Tanned and Untanned	Cwts.	485,604
Metals:—		
Copper, Unwrought, Part Wrought, and old Copper	Tons	12,370
Iron in Bars, Unwrought	,,	16,715
Zinc, Crude, in Cakes	,,	1,226
Tin, in Blocks, Ingots, Bars, or Slabs, and Regulus	Cwts.	48,633
Oil, Palm	,,	483,832
—— Cocoa Nut	,,	251,627
—— Olive	Tuns	1,559
Opium	Lbs.	308,273
Quicksilver	,,	2,314,828
Rice, not in the Husk	Cwts.	3,138,701
Saltpetre	,,	29,643
—— Cubic Nitre	,,	112,755
Seeds, Flax and Linseed	Qrs.	22,975
—— Rape	,,	51,889
Silk, Raw	Lbs.	3,213,057
—— Thrown	,,	41,189
Silk Manufactures	Val. £	362,156
Spices, Cinnamon	Lbs.	1,021,288
—— Pepper	,,	17,891,620
Spirits:—Proof		
Rum	Gallons	1,536,431
Brandy	,,	351,575
Geneva, and other Foreign and Colonial Spirits	,,	1,775,101
Total of Spirits	,,	3,663,107
Sugar, Foreign, Refined, and Candy	Cwts.	33,519
—— Unrefined	,,	204,013
—— Molasses	,,	75,810
Tea	Lbs.	39,387,206
Teeth, Elephants', Sea Cow, and Sea Horse	Cwts.	7,703
Tobacco, Stemmed	Lbs.	987,351
—— Unstemmed	,,	14,565.969
—— Manufactured, viz:—		
Cigars	,,	372,349
Other Sorts	,,	1,558,389
Wine	Gallons	2,036,277
Wool, Sheep, Lamb, Alpaca, and Llama	Lbs.	137,511,247

EXPORT MARKETS OF THE UNITED KINGDOM.—The following table compiled from returns of the Board of Trade gives the declared real value of British and Irish produce and manufactures exported from

the United Kingdom to Foreign countries and British possessions in the year ended the 31st of December, 1872:—

I. Foreign Countries.

	£
Russia, Northern Ports	5,021,189
——— Southern Ports	1,588,035
Sweden and Norway	3,411,280
Denmark Proper and Iceland, from 1861	2,056,390
——— Danish West Indies	463,094
Germany, including the Duchies from 1861	31,618,749
Holland	16,211,775
——— Java, and other Possessions in the Indian Seas	750,505
Belgium	6,499,062
France	17,268,839
——— Algeria	89,347
——— Possessions in Senegambia	8,402
——— Possessions in India	—
Portugal	2,310,202
——— Azores and Madeira	186,467
Spain	3,614,448
——— Canary Islands	225,932
——— Fernando Po	16,806
——— West India Islands	3,042,257
——— Phillipine Islands	393,142
Italy, including Venetia from 1861	6,557,538
Austrian Territories (including Venetia before 1861)	1,471,113
Greece, including Ionian Islands	7,923,649
Turkey	7,639,143
——— Wallachia and Moldavia	814,675
Egypt	7,213,063
Morocco	255,386
United States	40,736,597
Mexico	843,186
Central America	290,557
Haiti and San Domingo	617,560
New Granada (United States of Columbia)	3,150,337
Venezuela	530,800
Ecuador	82,282
Brazil	7,519,719
Uruguay	1,817,783
Argentine Republic	3,911,419
Chili	3,147,843
Peru	2,870,238
China (exclusive of Hong Kong)	6,624,511
Japan	1,961,327
Western Coast of Africa, exclusive of French and Spanish possessions	1,069,405
Other Countries	877,298
Total of Foreign Countries	195,701,350

II. British Possessions.

Channel Islands	706,233
Gibraltar	1,189,023
Malta	839,894
North American Colonies:—	£
British Columbia } Dominion of Canada }	9,465,233
Newfoundland	556,144
Prince Edward Island	171,900
Total of North American Colonies	10,193,277
West India Islands and Guiana	3,378,661
British Honduras	147,592
Australia:—	
West Australia	153,457
South Australia	1,413,542
Victoria	5,941,379
New South Wales	3,569,559
Queensland	575,388
Tasmania	188,205
New Zealand	2,300,143
Total of Australia	14,141,673
British India	18,471,394
The Straits Settlements	2,420,072
Ceylon	1,017,753
Hong Kong	2,872,673
Mauritius	561,962
Cape of Good Hope and Natal	3,705,854
Possessions on the River Gambia	46,332
Sierra Leone	294,339
Possessions on the Gold Coast	417,882
Other Possessions	151,383
Total of British Possessions	60,555,997
Total of Foreign Countries and British Possessions	256,257,347

Trade of our Ports.—The Customs duties collected at the port of London in the year 1872 fell considerably below ten millions, showing a decrease of nearly a quarter of a million below the amount in the preceding year. But the collection at Liverpool exceeded three millions, and at the other ports of England exceeded 3¼ millions, the two amounts showing together an increase of 443,000*l*. The collection in Scotland was 2¼ millions, and in Ireland nearly two millions. Among the ports showing an increase of customs revenue are Glasgow, Bristol, Newcastle, Hull, and Belfast. The number of vessels arriving in the port of London increased in 1872 to 11,518—namely, 7,054 sailing-vessels and 4,464 steamers; but the number of vessels cleared outwards shows a decrease to 8,730 of which upwards of 6,000 took out cargoes. The Custom-house returns show that in 1872 there were 35,027 passengers, with 74,783 packages, examined on board steamers coming up the Thames; 999 passengers, with 2,900 packages examined at Gravesend; 7,921 passengers with 61,508 packages at the various docks and wharves; and 70,569 passengers with 107,349 packages, at Charing-cross and Victoria railway stations; making a total of 114,516 passen-

gers and 246,540 packages. The number of passengers is in excess of any previous year, with two exceptions—namely, 1867, the year of the Paris Exhibition, when 116,355 arrived in London, and 1862, when the exceptional number of 143,012 was attracted by the Great Exhibition in London. The returns show that the trade of the port of Liverpool continues steadily to increase. In 1872 there were 5,446 vessels of 4,073,779 tons entered inwards, and 5,195 of 4,030,677 tons cleared outwards, making a total of 10,641 vessels of 8,104,456 tons, showing some decrease in the number of vessels, but an increase of 41,497 tons. The value of the exports from Liverpool increased in 1872 by nearly nine millions, and amounted to 115,350,058*l.*—namely, 95,911,554*l.* British or Irish, 12,079,100*l.* foreign and colonial, and 7,369,403*l.* in transit. The year seems to have been a prosperous year for the shipping interests. Freights were well maintained, and the value of shipping property, especially iron ships, was much increased. Sailing-vessels, however, had rather an advantage over steamers, owing to the high price of coals.

Our Merchant Shipping.—An official return of vessels registered under the Merchant Shipping Acts in 1868 and in 1872 presents the following figures:—In 1868 there were on the register, belonging to the United Kingdom, 24,701 sailing vessels, of 4,798,178 tons, and 2,934 steam vessels, of 900,596 tons—making a total of 27,635 vessels, of 5,698,774 tons. In 1872 there were 21,421 sailing vessels, of 4,145,888 tons, and 3,662 steam vessels, of 1,536,075 tons—making a total of 25,083 vessels, of 5,681,963 tons. In 1868 there were belonging to the British Possessions and Channel Islands 12,163 sailing vessels, of 1,461,446 tons, and 543 steam vessels, of 76,696 tons—making together 12,706 vessels, of 1,538,142 tons; in 1872 there were 11,040 sailing vessels, of 1,427,302 tons, and 681 steam vessels, of 104,564 tons—making together 11,721 vessels, of 1,531,866 tons. The total for the British Empire, therefore, was:—In 1868, 36,864 sailing vessels, of 6,259,624 tons, and in 1872, 32,461, of 5,573,190 tons; in 1868, 3,447 steam vessels, of 977,292 tons, and in 1872, 4,343, of 1,640,639 tons; total sailing and steam vessels in 1868, 40,341, of 7,236,916 tons, and in 1872, 36,804, of 7,213,829 tons. The estimated number of the crews was 340,516 in 1868, and 329,405 in 1872. Comparing 1868 and 1872 it will be seen that the work is done with more steam and less sail. The number of registered sailing and steam vessels of the United Kingdom (exclusive of river steamers) actually employed in the home and foreign trade of the United Kingdom was 22,250, of 5,516,434 tons, in 1868, and 22,554, of 5,761,608 tons in 1872.

Value of Imports in 1872.—It appears from the Customs' Report that, while the values of the exports of the produce and manufactures of the United Kingdom have risen 14·8 per cent., the values of the imports—namely, 354,693,624*l.*—have risen only 7 per cent. over those of 1871. The imports from foreign countries in 1872 were of the value of 275,320,771*l.*, showing an increase of 6·6 per cent.; and from British possessions 79,372,853*l.*, an increase of 8·8 per cent. In neither case is there so large a rise as in 1871, as compared with 1870, which amounted, in the case of foreign countries, to 7·6 per cent., and in that of the British possessions to 13·2 per cent. The principal countries with which our import trade has increased are Sweden, Norway, Denmark, France, Portugal, Spain, Asiatic Turkey, Egypt, China, Japan, Central America, Foreign West India Islands, Peru, Chili, and Brazil. Those which sent less of their produce and manufactures than in 1871 are Germany, Holland, Belgium, Italy, Austria, Greece, European Turkey, and the United States. Out of the 17 millions, the increase in the values of the imports from all foreign countries, nearly 12 millions fall to the share of France, our nearest neighbour. The values of the goods she has sent to us have risen from 29,888,488*l.* in 1871, to 41,798,005*l.* in 1872, a rise of 40 per cent., and she has thus more than made up the deficiency recorded for 1871, when the values fell from 37,607,514*l.* to 29,848,488*l.*, a decline of 20 per cent. The list of articles of food and raw materials imported from France in 1872 shows an increase of 605·5 per cent. in corn, 286·1 per cent. in potatoes, 80·5 per cent. in vegetables, 52·1 per cent. in fish, 39·2 per cent. in eggs, 24·7 per cent. in wine, 17·1 per cent. in butter, 216·8 per cent. in raw silk, 171·8 per cent. in oil-seed, 64·8 per cent. in hair; and in manufactures of France there is an increase of 215·7 per cent. in watches, 135·9 per cent. in straw hats or bonnets, 54 per cent. in iron and steel manufactures, 58·1 per cent. in sugar, 46·2 per cent. in cotton manufactures, 35·3 per cent. in silks, 22·8 per cent. in tanned hides, &c., and 21·6 per cent. in clocks. The list shows the rapid recovery of France from the ill effects of the war. The only manufactures which show a decided falling off in 1872 are those of wool, the values of which have declined from 3,321,921*l.* to 2,800,573*l.*, a decrease of nearly 16 per cent. The United States and Germany, on the other hand, are found this year exhibiting a decrease in the values of the articles they have sent us—in the case of the United States of nearly 6½ millions, and in the case of Germany of 32,000*l.* only. This decrease can in neither case be considered as in any way surprising, after the rise recorded for 1871, as compared with 1870, of upwards of 10 millions in the one case and nearly 4 millions on the other. In the case of the United States we begin with a decline of 2,300,000*l.* (in round numbers) in the article of wheat only, and of upwards of 800,000*l.* in that of wheat flour. The

article next in importance is that of cotton (raw), which shows a falling off in value of more than 7 millions. The decline in quantities is even at a larger rate, the prices of raw cotton having been higher in 1872 than in 1871. In addition to these three principal articles there is a falling off (in round numbers) in beef, salted, of 240,000*l.*; in butter, 114,000*l.*; in cheese, 300,000*l.*; in oil, spermaceti, 120,000*l.*; in oilseed cake, 190,000*l.*; in tobacco, unmanufactured, 900,000*l.*; and manufactured, 30,000*l.* On the other hand, there is an increase in the value of bacon and hams of 1,500,000*l.*; in iron and steel manufactures, 80,000*l.*; in oil of turpentine, 180,000*l.*; in resin, 190,000*l.*; in skins and furs, 380,000*l.*; in tallow, 140,000*l.*; in wood, hewn, 140,000*l.*, and sawn and split, 14,000*l.* The small falling off shown in the balance of increases and decreases in the large import trade with Germany scarcely requires special notice. The largest increases appear to be in the values of potatoes, sheep, toys, wheat, and woollen yarn: and the articles which show the greatest falling off in values are butter, cotton (raw), cutch, sugar (raw and refined), swine, and wool (sheep's). Of the British Possessions and their subdivisions enumerated in the returns, 21 show an increase in the values of goods they have sent us, and 11 a decrease. Of these 11, however, only one is a possession of any great importance—namely, the West India Islands. The value of the goods imported from these islands fell in 1872 to 5,082,297*l.*, a decline of 8·7 per cent.; but this decline, which is all in the value of unrefined sugar, is of no great importance when it is remembered that 1871 showed an advance of 22 per cent. The other colonies from which our importations have fallen off are the British Possessions on the Gambia, Sierra Leone, the Gold Coast, Aden, Newfoundland, Labrador, Prince Edward's Island, the Bermudas, and British Guiana. On the other hand, the imports from all our most important colonies show an increase in value. The imports from India, with Ceylon, &c., amounted in 1872 to 40,350,423*l.*, an increase of 10·5 per cent.; Hong-Kong, 940,922*l.*, an increase of 155·7 per cent.; Australia, 15,625,866*l.*, an increase of 7·6 per cent.; Canada, 8,535,173*l.*, an increase of 0·9 per cent.; Cape of Good Hope, 3,190,256*l.* an increase of 30·6 per cent.; Natal, 527,209*l.*, an increase of 25·9 per cent.; Mauritius, 1,539,565*l.*, an increase of 84·7 per cent. The account of the exports and imports of gold and silver bullion and specie in 1872 shows a balance of 727,849*l.* in favour of the exports over the imports, the former amounting to 30,335,861*l.*, and the latter to 29,608,012*l.* This is a reversal of the ordinary course of trade in bullion. This country being the entrepot of bullion for the world, the value of the imports generally exceed very considerably the values of the exports. The whole excess on the other side in 1872 is in the export of gold, the values of the silver imports being slightly higher than those of the exports. This peculiar feature of the trade in 1872 is undoubtedly owing to the special demand created in the bullion markets by the payment of the Franco-German indemnity. The total values of foreign merchandise transhipped at the ports of the United Kingdom in 1871 and 1872 were 13,896,760*l.* an increase of 22 per cent. over 1871. The summary of the whole trade of the United Kingdom in 1873, therefore, stands as follows:—Exports of home and foreign merchandise, as already stated, 314,588,834*l.*, and of gold and silver, 30,385,861*l.*—making together 344,924,695*l.*; imports of merchandise, as already stated, 354,693,624*l.*, and of gold and silver, 29,608,012*l.*—making together 384,301,636*l.*; transhipments, 13,896,760*l.*; making the grand total of the import, export, and transhipment trade 743,123,091*l.* showing an increase of 45,273,679*l.*, or 6·5 per cent. over 1871, which in its turn showed an increase of 15 per cent. over 1870.

Value of Exports in 1872.—From a review of the returns of export, import, consumption, and revenue, we find that the total values of our British and Irish exports to all countries in 1872 amounted to 256,257,347*l.*, showing an increase of 14·8 per cent. over 1871, and of 28 per cent. over 1870. In 1872, as compared with 1871, the prices of cotton yarn and cotton and linen manufactures had risen very slightly; of linen and woollen yarn and worsted and woollen manufactures more decidedly; of iron and iron manufactures very considerably; while the wholesale export price of coal per ton, by which the Customs estimates of value are governed, rose from 9*s.* 7½*d.* in 1870 and 9*s.* 9½*d.* in 1871 to 15*s.* 9½*d.* in 1872, an increase of 62 per cent., exclusive of profit added before it reaches the consumer. The value of the British and Irish exports to foreign countries in 1872—namely, 195,701,350*l.*—exceeded that of 1871 by 13·9 per cent. and that of 1870 by 32 per cent.; and the value of our exports to British Possessions in 1872—namely, 60,555,997*l.*—shows a rise of 18 per cent. over 1871 and of 16·8 per cent. over 1870. The value of British and Irish exports in 1872 to Sweden-namely, 1,985,848*l.*—shows an increase of 80 per cent. over 1871; to Chili, 3,147,843*l.*, an increase of 56·6 per cent.; to Norway, 1,425,432*l.*, 34·7 per cent.; to Peru, 2,870,238*l.*, 32·9 per cent.; to Portugal and dependencies, 2,496,669*l.*, 31·1 per cent.; to the Turkish dominions, excluding Egypt, 8,453,818*l.*, 26·1 per cent.; to Japan, 1,961,327*l.*, 23·8 per cent.; to Brazil, 7,519,719*l.*, 19·9 per cent.; to the United States, 40,736,597*l.*, 19 per cent.; to Greece, 923,649*l.*, 19 per cent.; to Denmark, 2,056,390*l.*, 17·6 per cent.; to Germany, 31,618,749*l.*, 15·3 per cent.; to Spain and

Canaries, 3,840,380*l*., 15 per cent.; to Holland, 16,211,775*l*., 14·9 per cent.; to Belgium, 6,499,062*l*., 4·5 per cent.; to Italy, 6,557,538*l*., 4·2 per cent.; to Egypt, 7,213,063*l*., 2·5 per cent.; to Russia, 6,609,224*l*., 0·38 per cent. The total values of the foreign and colonial merchandise which had been brought into and was again exported from this country amounted in 1872 to 58,331,487*l*., showing that, unlike the exports of British produce and manufactures, the values decreased in 1872 by more than two millions.

3. TRADE AND AGRICULTURE.

CONSUMPTION OF SUGAR.—A Parliamentary return, ordered on the motion of Mr. Crum-Ewing, states that in the year 1872, there were 15,505,998 cwt. of sugar of all sorts imported into the United Kingdom. The import of sugar from British Possessions advanced from 5,132,967 cwt. in 1871 to 5,224,470 cwt. in 1872; but the import from foreign countries advanced from 8,634,499 cwt. in 1871 to no less than 10,281,528 cwt. in 1872. The import from the Spanish West India Islands rose from 1,430,733 cwt. in 1871 to 3,091,275 cwt. in 1872; from Brazil, from 1,242,311 cwt. to 1,878,587 cwt.; from France, from 1,948,138 cwt. to 2,238,811 cwt. The import from Germany declined from 1,152,179 cwt. in 1871 to 341,816 cwt. in 1872. The quantity entered for home consumption was 14,049,995 cwt. in 1871 and 14,306,159 cwt. in 1872. The average declared value of sugar in 1872, exclusive of duty, was 23*s*. 8*d*. per cwt. for British East India, 26*s*. 8*d*. for British West India, 27*s*. 4*d*. for Mauritius, and 27*s*. 8*d*. for Spanish West India; this last being 8*d*. per cwt. higher than in 1871, Mauritius 2*d*. lower, but British West India 2*s*. higher, and British East India 3*s*. 3*d*. higher.

IMPORTATION OF TEA.—The Customs Commissioners report every year a considerable increase in the vast importations of tea into the United Kingdom. This year, however, it was not nearly so large as in 1871, when compared with 1870. The comparative figures for the three years are as follows:—

IMPORTS OF TEA.

From	1871.	1872.
	Lbs.	Lbs.
British India ..	15,163,907	16,507,655
China	151,636,036	160,520,882
Other Countries	3,098,360	7,898,611
Total ..	169,898,303	184,927,148

Increase in 1871 over 1870, 20 per cent.
Do. 1872 ,, 1871, 8 ,,

This is the first time in which the countries from which we derive our supplies of tea have been distinguished in the anunal Reports or in the monthly returns. We are immediately struck with the very large increase under the general head of "other countries," under which head Japan, which supplies us with increasing quantities of tea every year, is included; the quantities brought (though insignificant as compared with the total importations) having been more than doubled in 1872, as compared with 1871. The other principal countries falling under this general head are the Argentine Republic, Egypt, France, Holland, and the United States, in none, however, of which tea is produced. The total quantity of new season's tea received by steamer, viâ the Suez Canal, in 1872 was 60,000,000 lbs., as against 48,000,000 lbs. in 1871 and 28,000,000 lbs. in 1870. Notwithstanding the increase in the consumption of this article, to which we shall refer in a subsequent paragraph, the year 1872 is reported as having been a disastrous one to the tea trade generally. The proportion that the quantities of tea imported into London bear to the total quantities brought into all the ports of the United Kingdom still continues, as it has for many years past, to increase. Out of a total import of 184,927,148 lbs., 184,441,992 lbs., or 99·74 per cent. arrived in London, 295,725 lbs., or ·16 per cent., in Liverpool, and only 189,431 lbs., or ·10 per cent., at all the other ports of the United Kingdom taken collectively.

CONSUMPTION OF TEA.—The consumption of tea has (with one exception, in 1868) gone on steadily increasing for the last eight years, as shown in the following table, and the year 1872 shows the smallest rate of increase in the list:—

QUANTITIES OF TEA ENTERED FOR HOME CONSUMPTION.

Year.	Quantity.	Increase per cent.	Decrease per cent.
	Lbs.		
1864 ..	88,637,099	4	—
1865 ..	97,921,670	10	—
1866 ..	102,324,887	4	—
1867 ..	111,059,387	8	—
1868 ..	106,918,069	—	4
1869 ..	111,887,458	4	—
1870 ..	117,622,575	5	—
1871 ..	123,529,642	5	—
1872 ..	127,792,299	3	—

The year 1868 was altogether an exception to the rule, a decrease of 4 per cent. having taken place in the consumption. Out of the total quantity, 127,792,299 lbs.,

taken for consumption in the whole United Kingdom, 92,012,926 lbs., or 72 per cent., is entered in London, not only for consumption in the metropolis and adjoining districts, but for general distribution throughout the country, duty paid. This is the highest rate, as compared with the rest of the United Kingdom, to which these London entries have yet attained, the rate having gone on rising ever since 1865, and having reached 71·32 per cent. in 1871.

CONSUMPTION OF SPIRITS.—In the first half of the year 1873 the quantity of home-made spirits paying Excise duty as being retained for consumption as beverage in England was 7,245,871 gallons, an increase of 600,000 gallons over the quantity in the corresponding half of last year; in Scotland, 2,948,942 gallons, an increase of above 127,000 gallons; in Ireland, 3,030,471 gallons, an increase of nearly 216,000 gallons; making a total in the United Kingdom of 13,225,284 gallons, an increase of 942,806 gallons over the corresponding half of last year. The consumption of foreign and colonial spirits is much less than of home-made, but the entries of these also for consumption in the United Kingdom show a considerable increase in the first half of the year 1873.

HORSES.—The returns of the number of live stock in 1872, show that upon the total number of horses included in the returns for Great Britain, there was an increase of 3,000 as against the year 1871. The number of licences issued in 1872 for horses not included in the agricultural returns, was below the number in 1871 by about 7,000. The number of unbroken horses and mares kept solely for breeding in Great Britain in 1872, was 319,199. These figures do not allow the supply of young unbroken horses to be ascertained; but as probably only a small number of mares are kept solely for breeding, the number of young horses may perhaps be estimated at 300,000, which upon 2,150,000, the total of all the horses in Great Britain (unlicensed and licensed), would give about 14 per cent. as the probable proportion of young unbroken horses. The number of horses in Ireland was larger in 1872 than in 1871 by 3,000. The number of horses under two years of age in Ireland was returned as 96,000 in 1872, or nearly 18 per cent. of the total number of horses in Ireland. If yearlings may be reckoned at one-half of the young horses, 150,000 in Great Britain and 48,000 in Ireland would be about the number annually added to our stock of horses. Although horses are a description of live stock having a high money value, they are nevertheless large consumers of the produce of the land, and the number kept in Great Britain in proportion to the area under cultivation is probably much larger than in most other countries. In 1872 there were 7 horses to every 100 cultivated acres in Great Britain against 3½ in Ireland, 5 in Belgium and Holland, 3 in France.

THE BOOK TRADE.—The Custom-house returns for 1872 show that the export of printed books from this country in that year reached 81,422 cwt., of the declared value of 883,914*l.*, an increase of no less than 19,212 cwt. in quantity and 164,872*l.* in value over the preceding year. On the other hand, the import of books into this country was only 14,172 cwt., of the value of 149,189*l.*, showing a decrease of 335 cwt. in quantity and of 9,240*l.* in value. We sent out six times as much as we received. We exported our books to the United States in 1872 to the value of 307,684*l.*; to British North America, 81,590*l.*; to the West Indies, 13,563*l.*; to Australia, 181,084*l.*; to British India, 44,248*l.*; to Egypt, 77,229*l.*; to British Possessions in South Africa, 28,748*l.* The exports of books to European nations not speaking our tongue were not very large:—To France, of the value of 32,850*l.*; Germany, 27,573*l.*; Holland, 19,424*l.*; Belgium, 16,071*l.* Our imports of books, however, are mainly from such countries—from France in 1872 to the value of 46,958*l.*; Germany, 38,565*l.*; Holland, 18,590*l.*; Belgium, 11,685*l.*; Spain, 8,150*l.*; Italy, 1,215*l.* From the United States, to the value of only 13,560*l.*; from British North America only 1,493*l.*; and the import from other countries named in the list of book exports is not enough to find any place in the official list of our book imports.

4. POPULATION, PUBLIC EMPLOYMENT, AND VITAL STATISTICS.

LONGEVITY.—The report of the Registrar-General for the year 1871 supplied several facts on the subject of long life. In 1871 the following deaths were registered in England, the ages (like other particulars) being taken on the statement of the relatives or other persons supplying information of the death. There were 27 persons registered as dying at the age of 100 years, 17 at 101, 10 at 102, 5 at 103, 3 at 104, 2 at 105, 2 at 106, 1 at 107, 1 at 108, and 1 at 109 years. The last three should have special mention; a man in the district of Sevenoaks was registered as dying 107 years old; a man in the district of Ledbury 108; a woman in the district of Chester 109 years old. Seven centenarians died in the Metropolis, and 7 in Lancashire. Of the whole 69, 25 were men and 44 were women. From 1861 to 1871 the deaths of people registered as being 100 years old or more averaged 78 a year; 21 men and 57 women. The

Registrar-General mentions, as the only known instance of an insured life reaching 100 years, that of Jacob William Luning, who died in 1870 at the age of 103 years. His age was clearly established by documentary evidence submitted to the Registrar-General, and published by him in his weekly return.

BIRTHS, MARRIAGES, AND DEATHS.—The following table shows the total number of births, deaths, and marriages in England and Wales, and Scotland, from 1858 to 1872, and Ireland, 1865 to 1872:—

ENGLAND AND WALES.

Years.	Births.	Deaths.	Marriages.
1858	655,481	449,656	156,070
1859	689,881	441,790	167,723
1860	684,048	422,721	170,156
1861	696,406	435,114	163,706
1862	712,684	436,573	163,830
1863	727,417	473,837	173,510
1864	740,275	495,531	180,387
1865	748,069	490,909	185,474
1866	753,870	500,689	187,776
1867	768,349	471,073	179,154
1868	786,858	480,622	176,962
1869	773,381	494,828	176,970
1870	792,787	515,329	181,655
1871	797,428	514,879	190,112
1872	824,646	492,065	200,837

SCOTLAND.

1858	104,018	63,539	19,655
1859	106,543	61,714	21,201
1860	105,629	68,170	21,225
1861	107,036	62,287	20,828
1862	107,138	67,159	20,544
1863	109,325	71,421	22,087
1864	112,445	74,303	22,675
1865	113,126	70,821	23,577
1866	113,639	71,273	23,629
1867	114,115	69,024	22,521
1868	115,673	69,386	21,853
1869	113,395	75,789	22,083
1870	115,423	74,067	23,788
1871	116,127	74,644	23,966
1872	118,873	75,741	25,580

IRELAND.*

1865	144,970	93,154	30,802
1866	146,237	93,598	30,151
1867	144,318	93,911	29,796
1868	146,108	86,803	27,753
1869	145,659	89,573	27,277
1870	150,151	90,695	28,835
1871	151,665	88,720	28,960
1872	149,292	97,577	27,114

* Owing to the defective state of the Registration, the figures for births, deaths, and marriages in Ireland are only an approximation to the real numbers.

A YEAR'S HEALTH IN SCOTLAND.—The Registrar-General for Scotland has issued his abstract and short report for the year 1872, and states that the births registered were 118,873, or 34·9 per 1,000 of the population; the deaths 75,741, or 22·2 per 1,000; the marriages 25,580, or 7·5 per thousand. The birth-rate and death-rate coincided with the preceding ten years' average; the marriage-rate was considerably above the average. Dividing Scotland according to density or aggregation of population, the returns show all three events—births, deaths, and marriages—most numerous in ratio, as usual, where the greatest number of people are massed together. In the eight principal towns, each with above 25,000 inhabitants, the birth-rate was 38·1 per 1,000, the death-rate 27·6, the marriage-rate 9·5; in the large towns with from 10,000 to 25,000 people, birth-rate 39·0, death-rate 25·1, marriage-rate 8·7 per 1,000; in the small towns, with from 2,000 to 10,000, birth-rate 35·6, death-rate 21·5, marriage-rate 7·0 per 1,000; in the mainland rural districts, birth-rate 31·0, death-rate 17·2, marriage-rate 5·8 per 1,000; in the insular rural districts, birth-rate 27·1, death-rate 15·7, marriage-rate 4·8 per 1,000. The illegitimate births were 9·1 per cent. of the whole number of births; in mainland rural districts, as a whole, 10·8 per cent.; in the north-eastern and southern divisions of Scotland, above 14 per cent. In the last two years the proportion of male births has increased, and has reached the high ratio of 107 boys to 100 girls. The epidemic of small-pox in Scotland, which lasted from the latter part of the summer of 1871 to the summer of 1872, is supposed to have been the most severe which has occurred in Scotland since the general adoption of vaccination in 1799. Small-pox caused 1,537 deaths in the eight principal towns in Scotland in 1872, and probably the returns for all Scotland will show double that number. In the nine years 1856-64, before the new Scottish Vaccination Act came into full operation, and when vaccination was greatly neglected, the principal fatality of small-pox epidemics fell on children under five years of age, their deaths constituting three-fourths of the small-pox mortality; but (in the eight principal towns) they were less than one-fourth in the epidemic of 1872. If the ratio had been as before, the deaths of children from small-pox in those towns in 1872, instead of being (as they were) 362, would have been 3,370; the report attributes the saving of the 3,000 lives, and probably of 6,000 in all Scotland, to the new Vaccination Act. For that Act is now well carried into effect on all the children born, year by year. The returns for 1871 are complete; and they show, in regard to the children born in that year, excluding the infants who died before they could be vaccinated, that they were all either successfully vaccinated or proved unsusceptible of vaccination, except about

2½ per cent., who were lost sight of through removal from the district or other cause. This little minority, chiefly of wandering habits, unprotected against small-pox, with the unvaccinated persons who are by their age out of the reach of the Vaccination Act, presents a field ready for an epidemic of small-pox when from any cause it may come. It is suggested that the number of children escaping vaccination would be much smaller if the penalty could be enforced at an earlier period than at present; in populous parts of the kingdom, four months after birth would seem time enough to allow for having a child vaccinated.

Recruiting for the Army.—A table in the Report of the Army Medical Department for the year 1871, the last Report issued, gives some interesting particulars as to the recruiting during the year. The total number of men medically examined for entry into the service in the 12 months was 36,212, the rejections on the first examination being 10,836, and on the second 1,178, making in all 12,014, or a little more than one in three of the total number inspected. There has, it is stated, been an increase in the proportion rejected by civilians, and a decrease in the number rejected by army medical officers. The proportion of rejections in the case of natives of Ireland was larger than among the natives of the sister countries, being 354 in 1,000; while the number of Englishmen rejected was 329, of Welshmen 319, of Scotchmen 332, and of the natives of British colonies and foreign countries 255 per 1,000 of the total number of men inspected. The proportion of recruits furnished by the respective countries was:—England and Wales, 790; Scotland, 82; Ireland, 119; and the colonies and foreign countries, 7 out of every 1,000 inspected. The chief causes of rejection were:—Muscular tenuity and debility in 45 cases out of every 1,000 of the total number of rejections; diseases of the eyes and eyelids, the same number; disease of the heart, 26; varicose veins, 18; malformation of chest and spine, 21. The number rejected for what is termed muscular tenuity and debility was far greater among the military than the civilian examiners, being three among the former to every one among the latter. A comparison of the results of the examination in height and weight leads, it is stated, to the opinion that a better class of recruits, as regards physical development, is obtained at the regiments and depôts than at the head-quarters of recruiting districts. The statistics as to the education of the recruits are only furnished by the military medical officers. From their returns it appears that 143 out of every 1,000 examined were unable to read or write, 94 were able to read only, 740 were able to read and write, and in 21 cases in the 1,000 no record was made. Speaking generally, there was an increase in the number of men able to read and write as compared with previous years. Another division of the return shows the classes of the population from which the recruits were drawn. Labourers, husbandmen, and servants, furnished 637 in the 1,000: manufacturing artisans (as clothworkers, weavers, lacemakers, &c.), 80; mechanics employed in occupations favourable to physical development (as carpenters, smiths, masons, &c.), 182; shopmen and clerks, 77; professional men, students, &c., 7; and boys, 14. Among the rejections, the labourers formed 333 in the 1,000; the manufacturing artisans, 385; the mechanics, 321; the shopmen and clerks, 333; the professional men and students, 297; and the boys, 104.

A Population Register.—In the ten years between the census of 1861 and that of 1871 the natural increase of the population of England and Wales, by excess of registered births over deaths, was 2,705,598, and after deducting the number of English emigrants as reported by the Emigration Commissioners—namely, 649,742—there remained an increase or gain of 2,055,856. But the actual increase shown by the census returns of the persons enumerated in 1871 was 2,646,042, being 590,186 more than the above number. Something may perhaps be allowed for imperfection in the registration of births, but mainly and substantially this number, 590,186, must represent the immigration into England, in the ten years, of foreigners, Scotchmen, Irishmen, and emigrant Englishmen returning to their native land. We have only a defective record of emigration, no knowledge at all respecting immigration, and a census taken only once in ten years. The Registrar-General observes that the interest of the public at large in statistical inquiry is as yet not developed sufficiently to justify an attempt to establish a Population Register, or a record of the migration of every person leaving England or coming into it from Scotland, Ireland, or elsewhere beyond the seas; and it is of little use to speculate on the nearness or remoteness of the probability of obtaining statistics complete enough to demonstrate the part played by each of the many factors concerned in producing a growth or decline of the population. But he states that Population Registers are kept in Sweden, Belgium, and Holland; and that, by a recent decree of the King of Italy, a register of her fixed population is to be established in that country. It is to consist of three parts—one relating to houses, one to families, and one to individuals. For each person the register is to show the name, surname, and sex; the names of his parents, the place and date of his birth, his civil condition, whether single, married, or widower, and, if married, the name of his wife, ulterior changes of condition being duly posted up; his rank, profession, or occupation; his residence, his declared

civil domicile, and a reference to the folio relating to families under which he will be found inscribed.

DEATH AND THE SEASONS.—It is well known that the rate of mortality differs at different seasons of the year. The Scottish Registrar-General has examined the registers with a view to ascertain the relative effect which season has upon the mortality at various ages. The examination was confined to the deaths registered in the ten years 1856–65 in the eight principal towns of Scotland; but these contain very nearly a third of its population, and the facts they exhibit as to the influence of season are regarded as showing the effect upon Scotland generally. Dividing the year into two equal parts, the mortality as a whole is seen to be greatest in the winter and spring, and least in the summer and autumn; but the most fatal month of the season and the extent of the influence of season vary with age. Equalising the months to 31 days for comparison, it is found that the mortality of children under five years of age was least in September, and greatest in February, and that the deaths in the ten years ranged from 8,649 in September, to 11,165 in February. At the next age taken, from 5 to 20 years old, there is less variation in the monthly number of deaths than at any other period of life; August was the month of least, and February the month of greatest mortality, and the range was from 1,929 deaths in August, to 2,348 in February. Among persons between 20 and 60 years of age, the vigorous period of life, September was the month of least, and January the month of greatest fatality; and the range was from 4,724 in September, to 7,033 in January. The returns relating to persons above 60 years of age show the baneful effects of cold; the least fatal month was September, the most fatal was January, and the range was from 2,536 deaths in September, to no less than 4,337 in January. In 12,000 deaths at all ages in Scotland in the ten years 1856–65 (the months being equalised for comparison), there was 843 deaths in September, 856 in August, 858 in October, 895 in July, 954 in November, 956 in June, 1,010 in May, 1,073 in December, 1,083 in April, 1,134 in January, 1,145 in March, 1,193 in February; six of the months being above and six below the 1,000, which is the mean.

CAUSES OF DEATH.—The Registrar-General states in his report, recently issued, that there were 514,879 deaths registered in England and Wales in the year 1871, and that the causes of 507,713 of those deaths were specified, leaving 3,155 sudden deaths from causes unascertained, and 4,011 deaths from causes not specified or ill-defined. Annexed to the report is the usual analysis of the causes of death specified in the 507,713 instances. The year was one in which the mortality of England, 22·6 per 1,000 of population, was not far from the average, the 34 years 1838–72 showing 22·4 per 1,000. But 1871 is memorable for an epidemic of small-pox, which ravaged several parts of England in a way of which there has been no example for many years. In the 24 years ending with 1870 the deaths by this disease never reached 8,000 in any year; in 1871 they ran up to 23,126. The outbreak had all the suddenness of an explosion, for the deaths in the two previous years had been but 1,565 and 2,620. Some very important observations relating to this disease were made in the metropolitan asylums, in which nearly 15,000 patients were treated for small-pox. The total number of deaths from zymotic diseases in the year—5,448 in a million persons living, and more than 24 per cent. of the total mortality—exceeded the average, but the excess was entirely due to small-pox. In regard to other diseases of the zymotic class some observations are made. Among the enthetic diseases propagated by direct inoculation, syphilis is the most fatal, for to it 1,742 deaths are referred. But the rate of mortality by this disease was lower than in the three previous years; and Dr. Farr remarks that we may hope to see it still further reduced if proper precautions are taken to stop it at its sources. Hydrophobia prevailed quite epidemically in 1871, and never before were so many deaths recorded from this disease. The deaths by it in the four years 1868–71 were 7, 18, 32, 56. Police measures seem needed to stop its progress. To alcoholism 740 deaths were referred in 1871, 370 having been registered from *delirium tremens*, and 370 as from intemperance; 567 deaths of males and 173 of females. Many other diseases are indirectly the result of drinking to excess, so that the deaths by alcoholism are understated; but as the relative accuracy of the returns is probably increasing, the gradual decline of the deaths from 1,049 in 1865 to 740 in 1871 is regarded as evidence of decrease in the bad habit of drunkenness. Among the most fatal order embraces the diseases of the respiratory organs, and it is growing yearly more fatal in England. The death-rate by bronchitis rose from 1,188 per million living in the years 1850–59 to 1,749 in the ten years following, to 2,097 in 1870, and to 2,112 in 1871. The deaths by affections of the brain, nerves, and senses vary little from the average; to convulsion fewer deaths were referred than in previous years; yet their number was 25,309. Apoplexy, paralysis, and insanity were somewhat more fatal than previously. Heart disease is occurring more frequently in the returns than it did, and its causes require fuller investigation; it is now fatal annually to 1 in every 1,000 living, and the deaths in 1871 were 2,619, which exceed that ratio. Diseases of the digestive organs were fatal in 21,621 cases, including 8,711 deaths by the various affections of the liver. The next class of diseases comprises those incidental to development, growth, and senile

decay. The 2,471 death in 1871 from what are called the accidents of child-bearing tell strongly in favour of the efforts which are being made for the education of the midwives by whom so many of the women of England are attended. The deaths of infants under one year of age were no less than 125,868. There is one more class of deaths to be noticed—that of violent deaths, under which term are included all deaths resulting from accident, negligence, suicide, murder, or manslaughter. The number is exceedingly great, and it is increasing. The returns show 11,727 in 1838, 14,040 in 1854, 16,903 in 1871. In 1854 the violent deaths were 729 to a milion persons living, and there was no considerable increase in the ratio until the years 1863-4-5, when the rate rose to 772, 826, and 835. The year 1865 was the *maximum*, and the annual rate then gradually declined to 745 in 1870; in 1871 it rose to 452 in a million. The violent deaths in that year are classed as follows:—Males, 12,678; females, 4,315. Violent deaths by causes connected with railways, 1,126; by causes connected with mines, 1,033; by mechanical injuries, not connected with railways or mines, 5,904; by mechanical injuries, not connected with railways or mines, 2,900; by asphyxia or suspension of respiration, not connected with railways or mines, 5,021; other violent deaths, 1,009. Of the total number of violent deaths 143 are stated to have occurred to males and 53 to females while in a state of intoxication. The Registrar-General finds entered upon the registers for 1871 as many as 202 murders, and 179 instances of manslaughter; the police reported fewer of the former and more of the latter, having probably corrected the Coroners' returns by the results of subsequent trial. Among the persons registered as murdered are 120 infants less than a month old. There were 1,495 suicides, 1,103 of males and 392 females; there were among them four boys and three girls under 15 years old, and there were four men and one woman over 85. The deaths by suicide are remarkably uniform; 66 in a million living in 1858, and 66 in 1871, the annual average of the whole period being not quite 67. The deaths by burns and scalds are declining in number, but still reached 2,612 in 1871. There were above 1,000 deaths from falls; 235 persons were killed by horses or other animals, and 1,229 by some horse conveyance. There were 188 males and three females drowned while bathing, and possibly several more among the 1,634 registered as "drowned," but with the manner not stated. There are also the following deaths in the list:—Ten men and one woman killed by fighting, 66 persons by sunstroke, 28 by lightning; 81 were suffocated by food, &c., 480 children by bedclothes, and 277 by overlaying. A velocipede brought death to an aged woman; two persons were killed by the sting of a wasp, two more by the bite of a rat, another by swallowing a fish bone; the death of one infant is attributed to circumcision, and a girl was burnt to death by benzine.

5. CRIME, PAUPERISM, AND ACCIDENTS.

ARRESTS UNDER THE PEACE PRESERVATION ACT.—From a return recently published it appears that the number of arrests made under the Peace Preservation Act from the 4th of April, 1870, to the 2d of March, 1871, was 193; from the 3d of March, 1871, to the 9th of May, 1873, the number was 732. Of the orders of magistrates from the 4th of April, 1870, to the 2d of March, 1871, in respect of persons unlawfully carrying or having arms, contrary to the 11th and 12th of Victoria, caps. 2, 9, and 12, there were 408, 171 of these persons being committed for trial, 105 discharged, and 132 bailed. There were 11 search warrants from the passing of the Act to the 2d of March, 1871. It is shown that the number of orders made by magistrates from the 3d March, 1871, to the 9th of May last was 1,327, of which 150 were convictions or committals, 286 committals for trial, 588 discharges, and 272 bails.

SUICIDES.—Last year there were 1,455 coroners' inquests on suicide or self-murder —1,057 men and 398 women. According to official tables recently issued there were last year 740 cases of attempted suicide, or one to 31,181 of the estimated population. In the metropolis there were 405 cases.

SMUGGLING.—There was a considerable increase in the year 1872 in the number of seizures of tobacco, cigars, and spirits in the port of London, the number of cases of smuggling detected rising from 188 in 1871 to 293 in 1872. The total quantity of tobacco and cigars seized in London was 2,369 lb., an increase of 947 lb.; but the quantity of spirits seized was only 63 gallons, a decrease of 66 gallons. At the outports the seizures of tobacco and cigars exceeded 10 lb. and of spirits exceeding two gallons show a slight decrease, from 134 to 130, and the tobacco and cigars a large decrease in quantity, from 31,430 lb. in 1871 to 3,649 lb. in 1872; but the quantity of spirits seized shows an increase from 390 gallons to 1,332 gallons. The smaller seizures show an increase from 817 to 888, and petty smuggling seems to have increased. Some of the great offenders escaped with the loss of their prey. The Coast-guard seized near Cowes 69 casks con-

taining 286 gallons of brandy concealed in a cliff, but the guilty parties escaped; in another seizure, near Cowes, of 77 tubs of spirits, a notorious smuggler was also captured. The Commissioners of Customs report three attempts to defraud the revenue, not strictly smuggling cases. In these three cases as many as 3,470 ounces of British silver plate, of the value of 1,163*l*., were seized in London, having been entered for exportation as plate "new and never used," with drawback claimed, but found on examination to be old and used plate entered for drawback for purposes of fraud. Penalties amounting together to 250*l*. were recovered from the owners, and the plate was forfeited; and it being believed that this method of defrauding the revenue was by no means uncommon, the officers were instructed to use special watchfulness in the examination of plate presented for drawback.

PHOTOGRAPHY AND CRIME.—While in England and Wales the number of persons apprehended in 1871–2 was 22,156, the number of photographs of convicted criminals sent to London from the time the Act of 1870 came into operation to the 31st of December last, was 43,634, and the costs incurred thereby 2,948*l*. 18*s*. 3*d*. Including London, the number of cases, as far as known, which led to detection from the photographs was 156. Colonel Henderson, the Metropolitan Police Commissioner, reports that no costs had been incurred in the Habitual Criminals' Office in London for photographing prisoners. He states that from the 2nd of November, 1870, to the 31st of December last, 373 cases of detection have occurred by the identification of the photographs of criminals registered in the Habitual Criminals' Office, and in the same period 30,463 photographs of criminals had been received from the Governors of county and borough gaols and convict prisons in the Habitual Criminals' Office in London. At Petworth a notorious offender was detected by photographs being sent round before the trial.

RELIGIOUS CENSUS OF PRISONS.—A Parliamentary return states that there were 146,146 prisoners in the county and borough prisons in England and Wales in 1872, and that 96,097 of the prisoners belonged to the Church of England, 35,581 were Roman Catholics, 10,648 Protestant Dissenters, 256 Jews, 9 Greeks, 57 belonged to other persuasions, 279 professed themselves of no religion, and the religion of 219 was not ascertained. Thus, nearly thirteen-fourteenths either belonged to the Church of England or were Roman Catholics, more than nine-fourteenths belonging to the Church of England, and less than four-fourteenths being Roman Catholics. There were 133 salaried clergymen ministering to these 146,146 prisoners, namely, 118 belonging to the Church of England and 15 to the Church of Rome, the latter being about one-ninth and the former eight-ninths of the whole number. Besides these there were services rendered gratuitously by Roman Catholic priests in 59 prisons, by Dissenting ministers in 12, and by Jewish in 8 prisons. The return for Middlesex prisons shows 6,500 Roman Catholic prisoners, but no salary was allowed for the attendance of any Roman Catholic priest. The return for Scotland shows as many as 34,182 criminal prisoners in the year 1872, and of this number 11,434 belonged to the Church of Scotland, 5,841 to the Dissenters, 2,844 to the Church of England or Protestant Episcopal Church, and 10,740 were Roman Catholics. The prisoners were visited by the salaried chaplains, all of them clergymen of the Established Church of Scotland, and by 98 other clergymen, unsalaried, of whom 47 are classed as Dissenters, 34 Roman Catholics, 15 Protestant Episcopalians. In the general prison at Perth there is a paid visiting Roman Catholic priest, and only there. In Glasgow 4,488 of the whole 10,718 prisoners were Roman Catholics, and only a third of the prisoners were of the same persuasion as the chaplain. Prisoners not being members of the Established Church of Scotland may (by a rule made in 1854) be visited by a minister of their own Church; "under such restrictions imposed by the County Board as shall guard against the introduction of improper persons, and as shall prevent improper communication." Ireland presents a return of a different character. The whole number of prisoners in 1872 was 30,342. There were 1,016 Presbyterians and 15 salaried Presbyterian chaplains, 3,551 prisoners belonging to the Protestant Episcopalian Church, and 39 salaried chaplains for them; 25,657 Roman Catholic prisoners, and 39 Roman Catholic salaried chaplains for them. Seven Irish prisons are described as having, each of them, a salaried Protestant Episcopalian chaplain, but in all the year no one of the seven chaplains had so many as ten prisoners belonging to his faith. There are fewer Roman Catholic prisoners in the prisons of Ireland than in the prisons of England.

PAUPERISM IN IRELAND.—The first annual report of the Local Government Board for Ireland is occupied with an account of the year's work in the administration of the Poor Law. In the year ending the 15th of February, 1873, the weekly returns of persons relieved show an excess over the preceding year; the average daily number in the workhouses increasing from 45,338 to 45,753, and in out-door relief from 22,552 to 27,509. The injury to the potato crop in 1872 was serious; the wetness of the season interfered with the saving of the turf in those parts of the country in which it is the only fuel employed; the price of coal was doubled, owing to circumstances arising, not in Ireland, but in Great Britain; and food of all descriptions has been dearer. The expenditure for the relief of the poor in the year ending at Michaelmas,

1872, amounted to 729,331*l.*, being more by 43,663*l.* than in the preceding year, and 1*s.* 1½*d.* in the pound on the net annual value of the property rated. Adding the expenditure under the Medical Charities Acts, the Registration Acts, Sanitary Acts, &c., the total expenditure reached 894,888*l.*, being 54,753*l.* more than in the preceding year, and 1*s.* 4*d.* in the pound on the net annual value of the property rated. The The poor rate collected was only 748,586*l.*, the difference between that sum and the expenditure being to a great extent covered by the Parliamentary grant for medical and educational purposes. The year was marked by the small-pox epidemic. Under the alarm caused by it the dispensary medical officers vaccinated 282,484 persons in the year, and these officers treated 10,317 cases of small-pox; there were 677 deaths in workhouses from small-pox. In all Ireland there were 3,197 deaths from small-pox registered in 1872. The board have to state that a special inquiry recently made by their inspectors in regard to the system of boarding orphans and deserted children out of the workhouse has shown grievous neglect of several poor children placed out to nurse. The Local Government Board observe that the boarding-out system is adopted only in a minority of the Irish unions, and that in these there is much difference in practice, according as more or less attention is paid by the guardians to the selection of the foster parents and the supervision of the children. The number of the children out at nurse in Irish unions is stated at 1,542 in January last.

METROPOLITAN POLICE.—The number of the Metropolitan Police force was 9,748 at the beginning of 1873:—4 district superintendents, 26 superintendents, 261 inspectors, 974 sergeants, and 8,483 constables. The expenditure for the year ending the 31st of March, 1873, was upwards of 954,000*l.*, of which the police rate at 6¾*d.* in the £, contributed 626,270*l.*, and the Treasury 294,000*l.*

LONDON STREET ACCIDENTS.—The Metropolitan Police report that in the Metropolis (exclusive of the City) 118 persons were run over and killed in the streets in 1872—10 by cabs, 13 by omnibuses, 1 by a tramway car, 6 by carriages and broughams, 18 by light carts, 19 by waggons and drays, 30 by vans, 2 by horses ridden, and 19 by heavy carts. The total is below the six preceding years' average. But the number of persons maimed or injured in the streets in 1872 was 2,677, a number much above the average. The injury was done in 591 instances by cabs, in 145 by omnibuses, in 12 by tramway cars, in 323 by carriages and broughams, in 869 by light carts, in 127 by heavy carts, in 106 by waggons or drays, in 398 by vans, in 6 by fire-engines, in 96 by horses ridden, in 4 by velocipedes.

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6. EDUCATION, SCIENCE, AND ART.

NATIONAL EDUCATION IN IRELAND.—The Commissioners of National Education in Ireland state in their thirty-ninth annual report, which relates to the year 1872, that they had in that year 7,050 schools in operation receiving the Parliamentary grant, with 1,010,148 children on the rolls, and an average daily attendance of 355,821, being 8,029 fewer than in the preceding year. This decrease is accounted for by various circumstances: increased emigration, decrease of population, the prevalence of epidemics, distress caused by partial failure of the potato crop, and scarcity of fuel. The report gives an account of 1,005,270 pupils; 804,222 were Roman Catholics, and 201,048 were Protestants, the latter being, therefore, almost exactly one-fifth of the whole number. The 804,222 Roman Catholic children are traced to their several schools. One-half, 403,327, were in schools taught exclusively by Roman Catholic teachers, and with no Protestant children in attendance at those schools; 362,313 were in schools taught exclusively by Roman Catholic teachers, but with some Protestant children, 26,172 in all, also in attendance; the remainder of the Roman Catholics were also in mixed schools; 11,270 in schools taught conjointly by Roman Catholic and Protestant teachers, and 27,312 in schools taught exclusively by Protestant teachers, and with a very large majority of the pupils Protestants. In like manner the 201,048 Protestant children are traced to their schools. Only 36,572, being less than one-fifth, were in schools taught exclusively by Protestant teachers, and having none but Protestant pupils; the majority,—namely, 124,347, were in schools taught exclusively by Protestant teachers, but having also Roman Catholic pupils, 27,312 in all, in attendance; the remainder were also in mixed schools, 13,975 in schools taught conjointly by Protestant and Roman Catholic teachers, the Protestant children being the great majority, and 26,172 were in schools taught exclusively by Roman Catholic teachers, and with Roman Catholic children constituting an overwhelming majority. Thus about one half of the Roman Catholic pupils are in schools with a mixed attendance, but 19-20ths of the Roman Catholic pupils are in schools taught exclusively by Roman Catholic teachers.

Progress of Education in Great Britain.—The following table exhibits the progress of education in Great Britain from 1858 to 1872, distinguishing England and Wales, and Scotland:

Years ended 31st August.	Number of Schools inspected.	Number of Children who can be Accommodated.	Average number of Children in Attendance.	Number of Children present at Inspection.
	England and Wales (including Isle of Man and Roman Catholic Schools for Great Britain.)			
1858	5,435	1,001,097	636,048	698,303
1859	5,531	1,054,813	674,602	757,082
1860	6,012	1,158,827	751,325	830,971
1861	6,259	1,215,782	773,831	879,884
1862	6,113	1,292,560	813,850	906,158
1863	6,227	1,315,988	846,805	932,603
1864	6,470	1,332,553	862,817	983,928
1865	6,865	1,470,473	901,750	1,081,480
1866	7,134	1,510,721	919,922	1,116,374
1867	7,601	1,605,409	978,332	1,210,301*
1868	8,051	1,724,569	1,060,082	1,332,533*
1869	8,592	1,838,416	1,153,572	1,448,299*
1870	8,986	1,950,641	1,255,083	1,565,363*
1871	9,521	2,092,984	1,345,802	1,651,169*
1872	10,751	2,397,745	1,445,326	1,737,002*
	Scotland (exclusive of Roman Catholic Schools, included above).			
1858	1,206	154,867	124,979	123,441
1859	1,055	154,228	126,799	123,049
1860	1,260	161,421	132,909	131,961
1861	1,446	180,701	146,104	148,806
1862	1,456	183,680	150,999	151,268
1863	1,512	196,794	162,120	160,138
1864	1,421	188,904	148,317	149,363
1865	1,573	207,335	155,995	164,575
1866	1,619	213,487	162,133	171,230
1867	1,739	231,898	169,131	180,799
1868	1,843	246,041	181,698	195,132
1869	1,745	237,928	179,214	191,203
1870	1,963	264,594	198,448	215,165
1871	1,944	264,041	201,393	214,840
1872	1,962	267,412	206,099	217,461
	Total for Great Britain.			
1858	6,641	1,155,964	761,027	821,744
1859	6,586	1,209,041	801,401	880,131
1860	7,272	1,320,248	884,234	962,932
1861	7,705	1,396,483	919,935	1,028,690
1862	7,569	1,476,240	964,849	1,057,426
1863	7,739	1,512,782	1,008,925	1,092,741
1864	7,891	1,521,457	1,011,134	1,133,291
1865	8,438	1,677,808	1,057,745	1,246,055
1866	8,753	1,724,208	1,082,055	1,287,604
1867	9,340	1,837,307	1,147,463	1,391,100*
1868	9,894	1,970,610	1,241,780	1,527,665*
1869	10,337	2,076,344	1,332,786	1,639,502*
1870	10,949	2,215,235	1,453,531	1,780,528*
1871	11,465	2,357,025	1,547,195	1,866,009*
1872	12,713	2,665,157	1,651,425	1,944,463*

* Including in 1867, 24,876; in 1868, 36,768; in 1869, 48,855; in 1870, 63,704; in 1871, 73,360; and in 1872, 35,374, evening scholars examined by written papers, pursuant to Articles 142-149 of Revised Code.

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1854	263,000	1868	781,324
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1859	836,920	1873	1,299,803
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SCIENCE AND ART.—The annual report of this Department for the year 1872 gives the following details as to attendance at the schools and classes of Science and Art in connexion with the Department:— 36,783 persons attending Science schools and classes in 1872, as against 38,015 in 1871; and 244,134 receiving instruction in Art, showing an increase upon the previous year of 31,633, or nearly 15 per cent. The total number of persons who received direct instruction as students, or by means of lectures, in connexion with the Science and Art Department in 1872, was nearly 299,000, showing an increase, as compared with the number in the previous year, of 28,000, or 10 per cent. The museums and collections under the superintendence of the Department in London, Dublin, and Edinburgh, were last year visitedby upwards of 2,922,000 persons, showing the very considerable increase of 1,141,000, or about 63 per cent. on the number in 1871. The expenditure of the Department during the financial year 1872-3, exclusive of the vote for the Geological Survey, amounted to 209,117*l.* 2*s.* 2*d.*

7. EMIGRATION.

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1866	58,856	12,307	98,890	26,691	8,138	204,882
1867	55,494	12,866	88,622	31,193	7,778	195,953
1868	58,268	14,954	64,965	51,956	6,182	196,325
1869	90,416	22,559	73,325	65,752	5,975	258,027
1870	105,293	22,935	74,283	48,396	6,033	256,940
1871	102,452	19,232	71,067	53,246	6,438	252,435
1872	118,190	19,541	72,763	79,023	5,696	295,213
	678,175	167,529	876,410	409,651	80,469	2,302,234

EMIGRATION IN 1872.—From the annual report of the Emigration Commissioners—the last they will issue as the administration of the Passengers' Act has been transferred to the Board of Trade—we learn that the number of emigrants who left the United Kingdom in 1872 was 295,213, being an increase as compared with the previous year amounting to 42,778, and as compared with 1870, to 38,273. The number was in fact larger than in any year since 1854, and exceeded the average of the seventeen years since that date by 109,971. The increase, however, has not consisted so largely of natives of the United Kingdom as of foreigners, the actual increase of native emigrants being only 52,521, the remainder being of foreign origin. Another important fact brought out in the tables is, that whereas up to 1869 the Irish emigrants had always out-numbered the English in the three years from 1869 to 1871 inclusive, the number of English emigrants exceeded the Irish by 80,459, or on an average by 26,819 a year. In 1872 the excess of English over Irish was 45,427. Excluding the foreign emigrants, and those whose nationality was not distinguished, the proportion of the total number of the emigrants belonging to the three countries was 56 out of every hundred from England; 9 from Scotland, and 34 from Ireland. The division of the sexes among the emigrants showed a strong excess of males, chiefly among the unmarried adults, the figures standing at 179,067 males, and 116,146 females. In the conveyance of the passengers steam-ships were used to a much greater extent than in previous years, and to this cause is ascribed the diminution in the mortality on the voyage. The number of persons assisted to emigrate by grants from public funds during last year was 15,752, of whom the largest number went to Canada (5,279), and to New Zealand (6,279). The ports from which the greatest

PROGRESS OF EDUCATION IN GREAT BRITAIN.—The following table exhibits the progress of education in Great Britain from 1858 to 1872, distinguishing England and Wales, and Scotland:

Years ended 31st August.	Number of Schools inspected.	Number of Children who can be Accommodated.	Average number of Children in Attendance.	Number of Children present at Inspection.
	ENGLAND and WALES (including ISLE OF MAN and ROMAN CATHOLIC SCHOOLS for GREAT BRITAIN.)			
1858	5,435	1,001,097	636,048	698,303
1859	5,531	1,054,813	674,602	757,082
1860	6,012	1,158,827	751,325	830,971
1861	6,259	1,215,782	773,831	879,884
1862	6,113	1,292,560	813,850	906,158
1863	6,227	1,315,988	846,805	932,603
1864	6,470	1,332,553	862,817	983,928
1865	6,865	1,470,473	901,750	1,081,480
1866	7,134	1,510,721	919,922	1,116,374
1867	7,601	1,605,409	978,332	1,210,301*
1868	8,051	1,724,569	1,060,082	1,332,533*
1869	8,592	1,838,416	1,153,572	1,448,299*
1870	8,986	1,950,641	1,255,083	1,565,363*
1871	9,521	2,092,984	1,345,802	1,651,169*
1872	10,751	2,397,745	1,445,326	1,737,002*
	SCOTLAND (exclusive of ROMAN CATHOLIC SCHOOLS, included above).			
1858	1,206	154,867	124,979	123,441
1859	1,055	154,228	126,799	123,049
1860	1,260	161,421	132,909	131,961
1861	1,446	180,701	146,104	148,806
1862	1,456	183,680	150,999	151,268
1863	1,512	196,794	162,120	160,138
1864	1,421	188,904	148,317	149,363
1865	1,573	207,335	155,995	164,575
1866	1,619	213,487	162,133	171,230
1867	1,739	231,898	169,131	180,799
1868	1,843	246,041	181,698	195,132
1869	1,745	237,928	179,214	191,203
1870	1,963	264,594	198,448	215,165
1871	1,944	264,041	201,393	214,840
1872	1,962	267,412	206,099	217,461
	TOTAL FOR GREAT BRITAIN.			
1858	6,641	1,155,964	761,027	821,744
1859	6,586	1,209,041	801,401	880,131
1860	7,272	1,320,248	884,234	962,932
1861	7,705	1,396,483	919,935	1,028,690
1862	7,569	1,476,240	964,849	1,057,426
1863	7,739	1,512,782	1,008,925	1,092,741
1864	7,891	1,521,457	1,011,134	1,133,291
1865	8,438	1,677,808	1,057,745	1,246,055
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number of emigrants started were—Liverpool, 195,776; Cork, 33,616; London, 22,002; Glasgow, 22,311; and Londonderry, 10,512. The occupations of the emigrants were very numerous. General labourers formed 68,951 of the total number; mechanics (so described in the Passengers' Lists) 23,193; gentlemen, professional men, merchants, &c., 11,931; farmers, 9,170; miners and quarrymen, 5,569; agricultural labourers, shepherds, gardeners, carters, &c., 2,490; carpenters and joiners, 2,712; bricklayers, masons, plasterers, slaters, &c., 1,961; clerks, 1,001; and the remaining trades were all represented by numbers under a thousand, The number whose employment was not distinguished was 10,203. Of the adult females there were 36,846 married, and 28,810 classed as spinsters; 13,838 were domestic servants and farm servants; ninety-one army and navy pensioners obtained passages by the commutation of their pensions, of whom 41 went to Canada, 41 to the United States, and 6 to Victoria. The emigrants in North America remitted to their friends in the United Kingdom a sum of 749,664*l.* during the year.

THE DESTINATION OF OUR EMIGRANTS.—Out of the 295,213 emigrants departing from the United Kingdom in 1872, as many as 238,747, nearly four-fifths of the whole number went to the United States—140,969 males and 92,778 females. There went to the Australian colonies 15,876—9,068 males and 6,808 females; to New Zealand, 6,616; to Victoria, 5,269; to Queensland, 2,380; to New South Wales, 1,102. To British North America, 32,205; 20,092 males and 12,113 females; 29,984 to Ontario and Quebec; 2,043 to Nova Scotia. To the West Indies, 2,231—1,518 males and 713 females. To India, 1,841; Straits Settlements, 76; Central and South America, the large number of 6,411; to the Cape of Good Hope, 1,456; to Natal, 386; to China, 349; to Japan, 13; to Western Africa, St. Helena, and Madeira, 290; to Malta, 141; to the Falklands, 64; to Mexico, 63; to Mauritius, 56; to Eastern Africa, 7; to Aden, 1. Of the 68,951 "general labourers," no less than 62,494 went to the United States; of the 2,490 agricultural labourers, gardeners, &c., only 584 went to the United States, 286 to British North America, and as many as 1,350 to Australasia; of the 9,170 farmers, 7,562 went to the United States, as many as 1,215 to British North America, 334 to Australasia; of the 23,193 mechanics 16,570 went to the United States, and 6,454 to British North America; of the 5,569 miners and quarrymen 4,977 went to the United States, 446 to Australasia, 68 to British North America; of the 299 coal-miners 290 went to the United States; of 1,001 clerks only 481 went to the United States, 215 to Australasia, 90 to British North America; of the 501 (male) domestic servants, 390 went to the United States, 42 to British North America, 40 to Australasia. Of the 13,838 female domestic and farm servants 10,925 went to the United States, 643 to British North America, as many as 2,018 to Australasia; of the 1,470 gentlewomen and governesses no more than 811 went to the United States, 306 to British North America, 121 to Australasia. Of the 118,190 emigrants whose native country was England 82,339 went to the United States, 16,691 to British North America, 11,611 to Australasia, 7,549 to other parts; of the 19,541 emigrants of Scotch nationality 12,691 went to the United States, 4,254 to British North America, 1,571 to Australasia, 1,025 to other parts; of the 72,763 emigrants of Irish nationality 66,752 went to the United States, 3,437 (the great majority embarking at Londonderry) to British North America, 2,066 to Australasia, 508 to other parts; of the 79,023 foreigners emigrating through the ports of this country, 68,137 went to the United States, 7,805 to British North America, 610 to Australia, 2,471 to other parts. The nationality of the other emigrants, only a few in number, was not ascertained.

8. THE POST OFFICE.

THE WORK OF THE YEAR 1872.—It appears from the nineteenth annual Report of the Postmaster-General just presented to the Treasury, that the number of new post offices opened in the United Kingdom during the year 1872 was nearly 300, bringing the total number of offices up to 12,200, of which 870 are head offices. The new letter boxes placed in public thoroughfares numbered 700, making a total of 8,400 boxes now available, and giving, with the post offices, the gross number of 20,600 places open for the receipt of letters and papers as compared with 14,800, ten years ago or 4,500 before the penny post was established in 1840. Of these 20,600 receptacles, London appropriates 1,500. Turning to the Census Returns, it appears that the population of the United Kingdom is estimated at 31,817,108, and this would give an average of one post office or letter box to about every 1,550 persons. Referring to the number of letters which passed through the post office during the year, Mr. Monsell estimates them at between eight and nine hundred thousand, but some errors discovered in the numbers quoted in the previous Report, have led him to distrust the accuracy of some of the returns and the figures are therefore only to be taken as an approximation. Measures have however been taken to provide such a system of check-counting as will remedy this for the future. The number of letters returned to the Dead Letter Office, was about 3,600,000, of which 170,000 were sent back to foreign countries, and about 3,000,000 or eleven-twelfths were returned to the senders. About 88,000 of these

letters contained property of various kinds, while 2,700 valuable books owing to insufficient packing or the thinness of the covers became detached in transit. Upwards of 15,000 letters were posted during the year without any address, being about 500 more than in the previous year. Owing to insufficient postage, no less than 600,000 newspapers were stopped, while upwards of 100,000 intended for foreign postage were lost to their owners, owing to their having been posted after the lapse of eight days from the date of publication. In the Telegraph Department of the post office, the number of offices now open is 5,400, including 305 new offices in the year. The number of ordinary messages was nearly 15,000,000, or three millions more than in the previous year; while the press telegrams for the newspapers also increased, and included more than 28,000,000 words. On an important night in Parliament, upwards of 200,000 words, equal in length to 100 columns of the *Times*, were transmitted to the provincial papers. The number of miles of wire in use at the end of the year was 105,000. In the Money Order Department 270 new offices, also serving as savings banks were opened, bringing the total up to 4,600. The total number of orders issued, rose from twelve millions in 1871 to nearly fourteen millions in 1872, amounting to 24,000,000*l.*, but, owing to the reduced charge for orders for small sums, the profit was diminished. The number of depositors in the Post Office Savings Banks increased from 1,300,000 to 1,440,000, and the amount of their deposits from seventeen to nineteen million pounds sterling, or an average of 13*l.* to each. The proportion of depositors to population was in England and Wales 1 to 9, in Scotland 1 to 13, and in Ireland 1 to 50. The cost of each transaction, that is, of each deposit or withdrawal including the postage of demands, &c., is about 6*d.* At the end of last year, the number of immediate annuities was 2,700, showing an increase of 900 on the previous year; the number of deferred annuities was 275, being an increase of 17; and the number of Life Policies 3,300, being an increase of 640 on 1871. More than a million licences were issued at the post offices, producing a revenue of nearly 500,000*l.*, of which more than half were for dogs. The expenditure of the year was 3,685,000*l.*, and the net revenue 1,524,000*l.*, the latter being an increase of 260,500*l.* from postage, but a decrease on orders of 9,500*l.* or a balance of increase amounting to 251,000*l.* Taking the post office simply as a mercantile establishment and adding estimated sums of 480,000*l.* for the mail packets, 97,000*l.* for free postage of Government letters, and 48,000*l.* for buildings, the net revenue would be nearly 2,150,000*l.* The staff of officers numbers more than 40,000, of whom 9,600 are employed on telegraph work, 12,000 are postmasters, about 8,600 are clerks, and upwards of 19,000 letter carriers, messengers, and sorters.

9. MISCELLANEOUS.

PATENTS.—In the year 1872 there were 3,970 petitions presented for grants of letters patent in this country, and a stamp duty of 5*l.* was paid upon each; there were 2,988 notices given of intention to proceed with the application, and these also bore a stamp of 5*l.* each; there were 2,773 warrants signed for patents, also with the 5*l.* stamp; 2,771 patents were actually sealed, and also bore the 5*l.* stamp. In the same year 2,745 specifications were filed, bearing the 5*l.* stamp. The progressive stamp duty of 50*l.* was paid upon 791 patents to prevent their becoming void at the end of their third year; and the further duty of 100*l.* was paid on 193 patents to prevent their becoming void at the end of their seventh year, when half their term had run out. About 72 per cent. are allowed by non-payment, to lapse at the end of the third year, and only about 9 per cent. are kept alive beyond the seventh year. The fees on patents paid in 1872 to the Attorney-General and his clerk amounted to 6,030*l.*; the Solicitor-General comes under the new rule for payment of the law officers by salary for non-contentious business. The compensations payable from the Patent Fee Fund to the Scotch and Irish law offices amounted in the year to 3,450*l.* The whole income reached 137,840*l.*, and the expenditure left a surplus of 85,611*l.*

COUNTY COURTS.—The business of these courts show a tendency to decrease. The plaints entered, which exceeded 975,000 in 1868, have since declined, and in 1872 were only 900,775. The number of equitable suits, or proceedings, fell to 683 on the 59 circuits. The number of deserted wives' protection orders were 841 in 1870, 690 in 1871, and 747 in 1872.

LOAN SOCIETIES.—From the accounts relating to loan societies in England and Wales to the 31st of December, 1872, we find that on that date there were 30,308 members; the amount actually advanced and paid by depositors or shareholders in the year was 194,023*l.*; the sums in borrowers' hands on the 31st of December, 381,861*l.*; the amount circulated in the year, 634,869*l.*; the number of applications for loans in the year, 138,677; and there were 128,668 borrowers to whom loans were granted in the year. The amount paid for forms and inquiry in the year was 8,267*l.*; the amount paid for interest, 31,632*l.*; the expense of management, 18,520*l.*; the losses in the year, 2,682*l.* There were 9,004 summonses issued, and 1,798 warrants of distress issued. The summonses were granted for 18,492*l.*; the amount recovered was 16,702*l.* The societies incurred costs in recovering loans of 2,382*l.*, and were paid 2,054*l.*

CHRONICLE OF EVENTS AND OCCURRENCES,

Home and Foreign.

From November, 1872, to November, 1873.

1872.

Nov. 9. Bank rate raised from 6 to 7 per cent.
—. Great fire at Boston, U.S.A., spreading over about 100 acres.
10. The Golden Wedding of the King and Queen of Saxony celebrated at Dresden.
11. Great storm and hurricane in North West Germany, continuing 3 days.
14. Fatal colliery accident at Pelsall near Walsall, 22 deaths.
16. Mutiny of 39 men of the Kensington, and 71 men of the Bow Street division of the Metropolitan Police.
22. The British troops evacuated the island of San Juan.
23. The first election in Ireland under the Ballot Act held at Derry, resulting in the return of Mr. Lewis, Conservative, vice Mr. Dowse, Liberal.
—. Meeting at Reading to establish a county Friendly Society for Berks.
26. Prince Leopold commenced his residence at the University of Oxford.
.28 Bank rate lowered from 7 to 6 per cent.

Dec. 3. A joint committee of the Convocations of Canterbury and York agreed to prepare an explanatory declaration to the Athanasian Creed by a majority of 27 to 18, the Primate presiding.
8. Severe gale in England and Wales.
11. Meeting at the Mansion House to promote the establishment of a "Hospital Sunday" in London.
—. Dean Stanley's nomination as select preacher at Oxford confirmed by a majority of 60 in Convocation, upwards of 600 members voting.
12. Bank rate reduced from 6 to 5 per cent.
14. Professor Huxley elected Lord Rector of Aberdeen University for 3 years.
20. Day of Intercession for missions; services in cathedrals and churches throughout England.
21. Prince Bismarck's resignation of the office of Prime Minister of the German Empire accepted by the Emperor.
24. Terrible railway accident in Philadelphia, U.S.A., the cars falling 30 feet through a bridge, and taking fire.
26. Great snow storm in the United States; at least 25,000 railway passengers estimated to be snow-bound.

1873.

Jan. 1. Strike of colliers in South Wales.
9. Bank rate lowered from 5 to 4½ per cent.
11. Mr. G. Onslow M.P., and Mr. Whalley, M.P., ordered to appear before the court for contempt in regard to the Tichborne case.
15. The Emperor Napoleon buried at Chislehurst.
16. Order in Council establishing the Royal Naval College at Greenwich published in the *London Gazette*.
19. Terrible gale in the West Indies—injury to shipping, &c., estimated at 100,000*l*.
22. Terrible collision off Dungeness, the "Northfleet" emigrant ship being run down by a foreign steamer, and sunk with more than 300 souls.

Jan. 23. Bank rate reduced from 4½ to 4 per cent.
24. Mr. Thomas O. Harding of Trinity College announced as Senior Wrangler at Cambridge.
25. Special service at St. Paul's Cathedral, Mendelssohn's St. Paul with full orchestra.
29. Religious inspection of the London School Board Schools sanctioned by resolution of the Board.
30. Bank rate reduced from 4 to 3½ per cent.
31. Great meeting at St. James's Hall in defence of the Athanasian Creed.

Feb. 1. Greenwich Hospital opened as a Naval University.
—. Severe snow storm in England, many deaths resulting.
4. Rise of 8*s.* per ton in price of coal, bringing it up to 48*s.* a ton.
5. Treaty for the reciprocal extradition of criminals between Italy and England signed.
6. Parliament re-opened by Royal Commission.
8. Kew Bridge opened free from toll.
10. King Amadeus of Spain definitely announced to the Prime Minister his resolution to abdicate.
11. Abdication of King Amadeus; republic proclaimed; the votes in the Cortes being 256 against 32.
—. Mdme. Arabella Goddard, the pianist, gave her farewell concert at St. James's Hall.
12. A Government elected by the Cortes at Madrid, Signor Figueras obtaining 244 votes as President of the Council.
—. Bill for legalising marriage with a deceased wife's sister read a second time in the House of Commons by 126 to 87, 9 less than last year.
—. Price of coal advanced to 52*s.* a ton.
13. The Lord Chancellor introduced the Government scheme of Law Reform in the House of Lords, including the establishment of a Supreme Court of Judicature and a High Court of Appeal. In the Commons, in a speech of about three hours, Mr. Gladstone stated the chief features of the Ministerial plan for University reform in Ireland.
14. The first trial of the Galway election prosecutions concluded, the jury being unable to agree to a verdict on Mr. Quinn's case.
15. Fall of 2*s.* a ton in price of coal, leaving it at 50*s.*
17. Juries Bill read a second time in the House of Commons.
—. Suspension of Messrs. F. de Lizardi and Co. announced, with liabilities estimated at nearly a million sterling.
18. Senate of the University of London decided that Greek shall no longer be a compulsory subject in its matriculation examination.
—. Colliery explosion at Talke, 18 lives lost.
19. The 300th anniversary of the birth of Copernicus, celebrated at Thorn, in Prussian Poland.
—. Army estimates issued, showing a decrease of 408,000*l.* on last year.
20. Fall of a Concert Hall reported at Smyrna; 200 persons drowned.
21. Committee on the price and scarcity of coal appointed in House of Commons.
24. Spanish Cortes elected a new Ministry with Senor Figueras as President.
25. Six inches of snow in London.
—. Abandonment of the Galway election prosecutions announced by the Government.
26. Navy estimates issued, showing a decrease of 340,576*l.* on last year.

March 1. Great forgery on the Bank of England to the amount of 80,000*l.*

discovered; Noyes charged with being concerned in it, and brought before the Lord Mayor.

March 4. President Grant entered on his second term of office in New York, and delivered his inaugural address.

6. Bankers' clearing house returns for the past week, amounted to 161,770,000*l.*, being the highest on record.

7. Incursion of the King of the Ashantees with 12,000 men into British territory announced in the House of Lords.

8. Earthquakes in Central America; San Salvador destroyed.

10. New Library and Museum at the Guildhall of London opened to the public.

11. The Government defeated on the University Education (Ireland) Bill by 287 to 284.

12. London School Board resolved to remit the fees of children whose parents are unable to pay them.

13. Bill for legalising marriage with a deceased wife's sister rejected by House of Lords by 74 to 49.

—. Mr. Gladstone announced the resignation of the Ministry.

14. Mr. Charles Knight, former publisher of the "British Almanac and Companion," buried at Windsor.

15. Treaty for the evacuation of French territory by the German troops within 4 weeks after the 5th of July, except Verdun and neighbouring district, which is to be evacuated by 4 days after 5th September, signed at Berlin.

17. Adjournment of the House of Commons until 20th, moved by Mr. Gladstone to enable him to communicate with his colleagues on the result of Her Majesty's interview with Mr. Disraeli.

—. Ex-King Amadeus of Spain arrived at Florence.

19. Senor Francisco Salmeron elected President of the Spanish Assembly.

20. Mr. Gladsone gave his final Ministerial explanation in the House, stating that the Government consented to resume office, Mr. Disraeli having declined to form an administration. Lord Granville gave a similar explanation in the Upper House.

22. Great Meeting at Exeter Hall in support of Mr. Plimsoll's appeal for the mercantile marine.

26. Second reading of the Burials Bill carried in the House of Commons by 280 to 217.

—. Banquet to 200 of the Mayors of the Provincial Towns given by the Lord Mayor at the Mansion House.

—. Bank rate raised from 3½ to 4 per cent.

—. Highest tide known for 24 years at Lambeth, and for 50 at Putney.

29. University Boat-race won by Cambridge by 3¼ lengths; time 19m. 35s. The crews entertained at a Banquet at the Mansion House by the Lord Mayor in the evening.

31. Lectures on Printing commenced by the Stationers' Company at their Hall, with a view to promote the technical education of printers.

April 1. Wreck of the "Atlantic" steamship on coast of Nova Scotia; upwards of 700 lives lost.

2. Visit of Her Majesty the Queen to Victoria Park.

3. Formal reception of the Duc D'Aumale as a member of the French Assembly.

—. M. Buffet elected President of the French Assembly.

4. Mr. Lowe introduced the Budget, proposing to pay half the American indemnity, to reduce the sugar duty by one half, to take a penny off the income-tax, leaving it at threepence in the pound, and to exempt hotel waiters from duty.

April 7. Strike of gasmen at New York; the city in darkness.
8. Bach's Matthæus *Passions musik* sung at a special service at St. Paul's Cathedral with full orchestra.
11. Massacre of three of the United States Peace Commissioners by the Modoc Indians.
14. First stone of the Norfolk County School laid by the Prince of Wales at Elmham.
—. Third annual International Exhibition opened at South Kensington.
15. Trial of the "Devastation," breastwork turret vessel; result successful.
17. Reported murder of Sir Samuel and Lady Baker announced in the "Times."
—. Belgian Loan of 10,000,000*l.* announced at 3 per cent., issued at 81.
—. The Shah of Persia left Teheran for Europe.
23. The Grocers' Company voted 20,000*l.* to build a new wing at the London Hospital.
—. Trial of the Tichborne Claimant for perjury, commenced in the Court of Queen's Bench.
24. Revolution in Spain, dissolution of the permanent Committees.
27. Great fire in Manchester, destroying the Lancashire and Yorkshire Railway Company's works with stock valued at 200,000*l.*
28. Dr. Hans von Bülow made his first appearance in England at a Philharmonic Concert.
29. Shock of earthquake at Doncaster.
—. The House of Commons rejected Lord Claud Hamilton's motion for the state purchase of the Irish railways, by 107 to 65.

May 1. The Vienna Exhibition opened, the Prince of Wales being among the English guests.
—. The shipwrights in the Medway struck, and about 3,000 men in the building trade at Liverpool.
2. Retirement of Sir W. Bodkin, Assistant Judge of the Middlesex Sessions.
5. Treaty with the Sultan of Zanzibar signed, and the slave market cleared.
6. Sir Charles Dilke's motion for a redistribution of seats rejected in the House of Commons by 268 to 77.
7. Bank rate raised from 4 to 4½ per cent.
—. Permissive Prohibitory Liquor Bill rejected on motion for second reading in House of Commons by 321 to 81.
9. The Common Council of the City of London rejected a proposal to introduce tramways into the City by 77 votes to 31.
10. Bank rate raised from 4½ to 5 per cent.
12. The Shah of Persia left his kingdom on his visit to Europe.
—. Coronation of King Oscar II and Queen of Sweden at Stockholm.
—. Commencement of the trial of O'Keeffe *v.* Cullen at Dublin.
13. Motion for an address to Her Majesty, begging her to withhold her consent to the Endowed Schools Commissioners' scheme for Emanuel Hospital Westminster, rejected in the House of Lords by 286 to 238.
—. Spanish elections resulted in the return of 310 Ministerial Federalists, 30 extreme Radicals, 8 Internationalists, 10 Independent Republicans, and 30 Monarchists.
14. New Guildhall at Winchester, opened by the Lord Chancellor.
—. Mendelssohn's *Lobgesang*, performed with full orchestra at the Sons of the Clergy Festival at St. Paul's Cathedral.
—. Mr. Cowper Temple's "Occasional Sermons Bill" rejected in House of Commons by 199 to 53.

May 15. Ministerial crisis at Paris.
16. Mr. Miall's motion for the Disestablishment of the English and Scotch Churches rejected in the House of Commons by 356 to 61.
24. M. Thiers resigned the Presidentship of the French Republic, his Government having been defeated in the Assembly by 360 to 344 votes. Marshal MacMahon elected President, 392 Deputies voting, of whom 390 approved the motion.
—. Alexandra Palace, Muswell Hill, opened to the public.
26. The Opera House at Malta destroyed by fire.
28. Mr. Gladstone presided at the 84th anniversary of the Royal Literary Fund.
—. The Derby won by Mr. Merry's "Doncaster" by a length and a half.
29. Second son of the Princess Alice of Hesse killed by a fall from a window at Darmstadt.
30. Loan Exhibition of art needlework, opened at South Kensington.

June 1. The newly elected constituent Cortes met for the first time at Madrid.
2. Great meeting of Trades Unions in Hyde Park, to denounce the Criminal Law Amendment Act, the penal clauses of the Master and Servant Act, and the Conspiracy Laws as far as they are applicable to combinations of labourers.
3. Memorials to Lord Derby at Preston, and Sir Robert Peel at Huddersfield, unveiled.
5. Bank rate raised to 7 per cent.
7. Mutiny of the Republican troops at Madrid.
8. A Federal Republic proclaimed by the Cortes at Madrid by 210 votes against 2.
9. Alexandra Palace, Muswell Hill, destroyed by fire.
10. Nineteenth anniversary of the opening of the Crystal Palace, celebrated by a special festival.
—. Khiva entered by the United Russian troops, and the capital taken.
11. Senor Pi y Margall elected President by the Spanish Cortes.
12. Bank rate reduced to 6 per cent.
15. Hospital Sunday in London, the system being introduced in the metropolis for the first time. Collections in 1,060 Churches and Chapels amounted to 25,511*l.*, 1,859*l.* in addition being received from other sources.
16. The Imperial Grand Duke of Russia and Princess Dagmar, arrived at Woolwich on a visit to the Princess of Wales.
17. A Select Committee on the grievances of Civil Service Writers appointed in the House of Commons.
18. The Shah of Persia arrived in London.
20. Reception of the Shah by Her Majesty at Windsor.
21. Cholera reported to have broken out in the United States, also at Rustchuk in Turkey in Europe.
—. Reception of the Shah by the Lord Mayor at the Guildhall.
23. Inspection of the Channel Fleet by the Shah at Spithead.
24. Review at Windsor by the Queen in presence of the Shah.
25. The Shah visited Greenwich Hospital.
26. The Shah left London for Liverpool.
—. The Public Worship Facilities Bill rejected in the Lords by 68 to 52.
—. The foundation stone of "Christ Church, Lambeth" for the Rev. Newman Hall's congregation from Rowland Hill's Chapel laid.
27. Lord Stanhope's proposal for an address to Her Majesty, praying her to institute an Order of Merit for men eminent in Literature, Science, or Art, negatived in the House of Lords.

June 29. Last service held at St. Martin Outwich, Bishopsgate, previous to the demolition of the church under the Union of Benefices Act.
—. Severe earthquake in Italy; great injury done at Filetto and Vittoria.
30. Visit of the Shah to the Crystal Palace.

July 1. Meeting at Exeter Hall, Lord Shaftesbury in the chair, "to protest against the introduction of the confessional in the Church of England."
—. The first case under the Wild Birds' Protection Act dealt with by the Borough Magistrates at Nottingham.
2. The Shah took leave of Her Majesty at Windsor.
5. The Shah left England for Paris.
7. Loss of the "Inman" steamer, City of Washington.
—. Mr. Stuart, M.P. for Waterford, took his seat in the House of Commons, being the first English clergyman who has been admitted to the House since the days of Horne Tooke.
8. Earthquake at Valparaiso.
10. Bank rate reduced to 5 per cent.
14. Action between the English Forces and the Ashantees; Elmina bombarded.
15. The Queen's Prize at Wimbledon won by Sergeant Menzies of Edinburgh.
16. Don Carlos entered Spain. Estella captured by the Carlists.
17. Baronetcy conferred upon Sir Sydney Waterlow, Lord Mayor of London, and knighthood upon the Sheriffs, Mr. Alderman White and Mr. Perkins.
—. Bank rate reduced to 4½ per cent.
—. Sanction of the Queen in Council given to the contract of matrimony between the Duke of Edinburgh and the Grand Duchess Marie Alexandrovna of Russia.
—. Mr. J. B. Monckton elected Town Clerk of London.
18. Senor Salmeron elected President of the new Spanish Ministry by 119 votes, against 93 for Senor Pi y Margall.
19. The dispute in the Building Trade amicably settled.
21. Royal Commission to enquire into grievances of officers in the Army, agreed to in the House of Lords.
—. Vote of confidence in MacMahon's Government carried by a majority of 130 votes in the French Assembly.
22. French Treaties of Commerce with England and Belgium, signed at Paris.
—. Dr. Kenealy opened his speech for the defence in the Tichborne case.
23. Severe thunder storms in the Midland counties and North of England.
24. Bank rate reduced to 4 per cent.
—. Report of the Select Committee on the Zanzibar Mail Contract published, censuring Mr. Lowe and rescinding the contract.
25. Bishop Wilberforce buried at Lavington.
28. Mr. W. E. Foster, M.P., opened the London School Board Schools in Wilmot Street, Bethnal Green.
—. Two cases of Asiatic Cholera at Queen Street, Tower Hill, among Danish emigrants.
29. Treaties of Commerce with England and Belgium adopted by French Assembly.
—. New regulation for compulsory registration of letters containing stamps and bank notes withdrawn.
31. Second reading of the Duke of Edinburgh's Annuities Bill carried in the House of Commons by 162 to 18, giving the Duke 10,000*l.* a year on his marriage in addition to the 15,000*l.* already enjoyed by him.
—. Bank rate reduced from 4 to 3½ per cent.

Aug. 1. The Duke of Edinburgh's Annuity Bill passed through Committee in the House of Commons.
2. Fatal Railway accident at Wigan; 11 killed.
4. Translation of Dr. Browne to bishopric of Winchester, and nomination of Dr. Woodford to succeed him as Bishop of Ely, announced.
5. Parliament prorogued.
—. Forty-first annual congress of the British Medical Association assembled in London.
—. Interview between the Comte de Paris and the Comte de Chambord at Vienna, the Comte de Paris formally recognizing the Comte de Chambord as the sole representative of the monarchical principle in France.
6. Formation of branches of the International in Denmark forbidden by decree.
—. Resignation of Mr. Baxter as Secretary to the Treasury announced.
8. Ministerial changes announced, including Mr. Bruce's retirement from the Home Office to be succeeded by Mr. Lowe.
9. Terrible steamboat accident on the Potomac, a fire breaking out in a boat crowded with passengers.
11. The first "Old Catholic" Bishops consecrated at Kremmenie.
13. Capture of the "Deerhound" with arms for the Carlists by a Spanish gunboat.
14. Outbreak of Typhoid fever in St. Marylebone, traced to milk supply.
15. Napoleonic Fête at Chiselhurst.
17. The Schumann Festival commenced at Bonn.
18. Commencement of the Cannock Chase manœuvres.
19. Holyhead Harbour and Breakwater, opened by the Prince of Wales and Duke of Edinburgh.
20. Narrow escape of Prince Arthur from drowning, while bathing at Trouville.
21. First witness called for the defence in the Tichborne trial.
—. Bank rate reduced from 3½ to 3 per cent.
—. Prince Napoleon elected President of the Council General for Corsica.
23. Fatal Railway accident at Sheffield, a passenger train completely cut in two by a fish train, 3 persons killed.
—. Albert Suspension Bridge over the Thames near Chelsea, opened.
26. Commencement of the Birmingham Triennial Musical Festival.
—. Conviction and sentence of the bank forgers.
27. Great fire at Belfast, Maine, 125 buildings destroyed.
29. Earthquake at Nottingham, two shocks being felt, the first of six seconds, and the last of about one second duration.

Sept. 2. The Roman Catholic Piigrims left London for Paray-le-Monial.
—. The monument of Victory unveiled at Berlin.
3. International Fruit Exhibition opened at Manchester by Lord Derby.
4. The Spanish Ministry resigned on a vote of the Cortes of 89 to 85 against them, rejecting their proposal to exclude the punishment of death from the military code.
—. Third anniversary of the declaration of the French Republic.
5. The War Indemnity completely paid off by France.
7. Senor Castelar elected President of the Spanish Ministry by 133 votes against 67 for Senor Pi y Margall.
8. New docks at Flushing opened by the King of Holland.
9. Mr. Gladstone gazetted as Chancellor of the Exchequer, *vice* Mr. Lowe.
11. Close of the Autumn Manœuvres at Cannock Chase.

Sept. 11. Sir F. G. Ouseley's new oratorio *Hagar* performed at the Hereford Festival.
12. The officers of the Ashantee Expedition left England for the Gold Coast.
—. Free Library and Museum, erected by the Corporation, opened at Brighton.
13. Final evacuation of France by the Germans.
16. Great fire in Chicago.
18. The Tichborne Claimant forbidden by the Lord Chief Justice to attend public meetings.
—. Suspension of Jay, Cooke, and Co. announced at New York; financial panic.
20. Serious injuries sustained by the Naval and Marine Forces on the Gold Coast.
22. Capture of the Murillo off Dover.
—. Financial crisis at New York; Stock Exchange closed.
23. The Shah of Persia arrived at Teheran on his return from Europe.
—. Hundredth day of the Tichborne Trial.
25. Bank rate raised to 4 per cent.
—. Great Banquet to the Lord Mayor at York, attended by upwards of 200 Provincial mayors.
26. Mr. Henry James, Q.C., gazetted Solicitor-General.
29. Bank rate raised from 4 to 5 per cent.
—. Alderman Lusk, M.P., elected Lord Mayor of London.
30. Mr. John Bright received the seals of the Duchy of Lancaster.

Oct. 1. Social Science Congress opened at Norwich with Lord Houghton as its President.
6. Trial of Marshal Bazaine commenced.
7. Church Congress commenced at Bath.
14. Bank rate raised from 5 to 6 per cent.
17. Twelve hundredth Anniversary of the foundation of Ely Cathedral celebrated by a great festival.
18. Bank rate raised to 7 per cent.
21. First Bristol Musical Festival commenced.
22. Jubilee of the Oxford Union Society celebrated at Oxford, the Lord Chancellor presiding.
31. Letter published from the Comte de Chambord declining finally to be put forward for the French monarchy.

Nov. 1. Bank rate raised to 8 per cent.
2. Vienna Exhibition closed.
4. Great service at St. Paul's Cathedral preparatory to the London Mission of 1874.
–. Prolongation of Marshal MacMahon's Powers as President for ten years, carried almost unanimously at an important meeting of all sections of the Right.
6. Great meeting at St. James's Hall, to promote the election of members of the School Board for London, pledged to support religious education and to protect voluntary schools.

NECROLOGICAL TABLE

OF DISTINGUISHED AND NOTABLE PERSONS WHO DIED 1872-73.

1872.		Age.
Nov.	5. SULLY, Thomas, American portraint painter; at Philadelphia	90
	8. LEESON, Henry Beaumont, M.D., late senior physician of St. Thomas's Hospital; at Bonchurch, I.W.	70
	—. FISK, William, historical painter; at Chelmsford	76
	11. MARTINEAU, Rev. Arthur, M.A., Preb. of St. Paul's, Rector of St. Mildred, Bread Street, and Chaplain to Archbishop of Canterbury; at Cannes	65
	13. CARPENTER, Mrs. M. S., portrait painter	80
	14. BACON, Sir Henry Hickman, the Premier English Baronet; at Thonock	52
	16. NICOL, James Dyce, M.P. for Kincardineshire; in London	67
	17. BECKETT, Sir Thomas, the oldest English Baronet; at Gainsborough	93
	20. LUCCA, Francesco, Italian music publisher; at Milan	71
	21. LANE, Richard James, H.R.A., painter; at Kensington	72
	22. MACMILLAN, John, M.A., Emeritus Master, High School of Edinburgh; at Edinburgh	
	23. BOWRING, Sir John, LL.D., F.R.S., formerly Minister Plenipotentiary in China, &c.; at Exeter	80
	24. PALMER, Robert, M.P. for Berks for 36 years; at Reading	79
	25. PARTRIDGE, John, Portrait Painter Extraordinary to Her Majesty; at Brook Street	83
	28. MCLEOD, Sir Donald Friel, C.B., K.S.I., late Lieut.-Gov. of the Punjab; at Kensington	62
	—. BAHR, Professor, editor of "Herodotus"; at Heidelberg	
	29. GREELEY, Horace, editor of the *New York Tribune;* at New York	61
	30. ASCHER, Rev. Simon, for 40 years Chief Reader at the Great Synagogue of London; at St. Mary Axe	83
	—. SOMERVILLE, Mrs., authoress and mathematician; at Naples	91
Dec.	2. BUFF, Dr. Heinrich Ludwig, Professor of Chemistry; at Prague	45
	6. POUCHET, Felix Archimède, naturalist, the leading advocate of the doctrine of spontaneous generation; at Paris	72
	7 RANKLEY, Alfred, painter of *genre* subjects	52
	9. LORD, John Keast, manager of the Brighton Aquarium; at Brighton	54
	—. WYVILL, Marmaduke, M.P. for York City, 1820–1830; at Constable Burton	81
	10. NORRIS, Dr. Edwin, linguist, one of the founders of Assyriology	77
	11. KAMEHAMEHA V., King of the Haivaiian Islands; at Honololu	42
	15. BLAGROVE, Henry, violinist; at Marylebone Road	61
	—. DISRAELI, Mary Anne, Viscountess Beaconsfield, wife of the Right Hon. B. Disraeli; at Hughenden	
	20. PUTNAM, George Peabody, American publisher; at New York	59
	22. COOTE, HOLMES, F.R.C.S., surgeon and lecturer at St. Bartholomew's Hospital, &c.	53

Age.

Dec. 24. RANKINE, W. J. M., LL.D., F.R.S., Professor of Civil Engineering and Mechanics, in the University of Glasgow; at Glasgow 52

26. SMITH, Archibald, LL.D., F.R.S., barrister-at-law, mathematician and astronomer; at Putney 58

27. RAMSAY, Very Rev. E. B., Dean of Scotch Episcopal Church, author of "Reminiscences of Scottish Life and Character," &c.; at Edinburgh 79

BOWES, Very Rev. G. H., Dean of Manchester 1847-72; at Manchester 78

1873.

Jan. 2. KATCHENOWSKY, Professor, Russian Jurist; at Charkow . 45

3. ELLERTON, John Lodge, M.A., Oxon, amateur musician and composer; at Connaught Place . . . . . .

4. LONGMAN, Charles, F.G.S., High Sheriff of Herts in 1872; at King's Langley . . . . . .

7. BAXTER, William Edwin, proprietor of the *Sussex Express*; at Croydon 65

8. FINLAY, John E., LL.D., editor of *Newry Telegraph*; at Newry . . . . . .

–. VAN MISNDEN, Dr. Jan Conrad Hacke, author, translator of Dante's works; in Holland . . . . . .

9. HANNAY, James, Consul for Catalonia, author of "Singleton Fontenoy," &c.; at Barcelona 45

–. NAPOLEON, Louis, Ex-Emperor of France; at Chislehurst . 65

10. DALL'ONGARO, FRANCESCO, Venetian poet and author; at Naples 65

11. SKEEN, William, journalist; at Camden Town 60

—. VENN, Rev. Henry, B.D., Prebendary of St. Paul's, Hon. Secretary of the Church Missionary Society for 30 years . . . . . .

15. BERGNE, J. B., superintendent of the Treaty Department in the Foreign Office; in London . . . . . .

18. GRAVES, S. R., M.P. for Liverpool since 1865; at Euston Hotel, London 55

—. LAURO, Dominico, poet and patriot; at Florence . .

19. COMBROUSE, Guillaume, archæologist and numismatist; at Paris 65

—. NOEL, Hon. and Rev. Baptist W., formerly a clergyman of the Established Church; at Stanmore 74

20. LUSHINGTON, Right Hon. Stephen, LL.D., for 30 years Judge of the Consistory Court; at Ockham 92

24. RICARD, Gustave, French portrait painter; at Paris . . 49

—. BELLASIS, Edward, Serjeant-at-Law; at Hyères, France . 72

25. ROSENKRANTZ, Baron, Iver, Danish Minister; at Copenhagen 59

27. SEDGWICK, Adam, LL.D., F.R.S., F.G.S., Professor of Geology at Cambridge; at Trinity College 88

—. HART, Hon. John, C.M.G., formerly Chief Secretary of the Colony; at South Australia 64

28. PIERSON, Dr. Henry Hugh, composer; at Leipzig . . 57

31. ROSE, Ven. Henry John, B.D., Archdeacon of Bedford . 73

Feb. 1. LUXTON, John, seaman, engaged at Trafalgar; at Tremebraze, Cornwall. 94

–. MAURY, Matthew F., Captain in the U.S. Navy, hydrographer; at Lexington, U.S.A. 66

2. BAYLEY, Hon. Henry Vincent, Judge of the High Court of Judicature; at Calcutta 57

3. HUNTER, John Kelso, artist and author; at Pollokshield, N.B. 71

–. LOMAX, —, bookseller, elected first Conservative Mayor of

		Age.
	Lichfield, under the new Municipal Act, in 1843; at Lichfield	89
Feb.	5. GASKELL, James Milnes, M.P. for Wenlock, from 1821; at Park Lane	62
	7. LE FANU, Joseph Sheridan, barrister, journalist, novelist; at Dublin	58
	8. HADDAN, Arthur W., B.D., Hon. Canon of Worcester, late Fellow of Trinity, Oxford; at Barton-on-Heath	56
	12. BLACKIE, John, junior, publisher; at Glasgow	67
	14. HANLEY, Joseph, Secretary of H.M. Almonry for 61 years; at Whitehall	84
	—. SHEPHERD, Rev. T. H., Canon of Southwell, and for 62 years rector of Clayworth; at Clayworth	94
	17. OGILVIE, Rev. C. A., D.D., Professor of Pastoral Theology, Canon of Christ Church, Oxford, and Rector of Ross; at Oxford	79
	18. DOLBY, Anastasia, author of works on Church embroidery; at Highgate	48
	20. JULIEN, Stanislas, Chinese scholar and orientalist; at Paris	74
	23. BARCLAY, Rev. Dr. Thomas, Principal of the University of Glasgow; at Glasgow	81
	24. GUTHRIE, Rev. Thomas, D.D., of the Free Kirk of Scotland, editor of the "Sunday Magazine," a distinguished promoter of Ragged Schools; at St. Leonards	69
	—. WRIGHT, Frank, iron and coal master, philanthropist; at Osmaston, Dudley	66
	25. DE SÉGUR, General, the oldest member of the French Academy; at Paris	92
	26. CHANNELL, Sir W. F., late Baron of the Court of Exchequer; at Hyde Park Gardens	68
	28. GRAVES, Robert, A.R.A., engraver; at Highgate Road	74
March	2. BROCKET, Stanes Brocket, Senior Bencher of the Middle Temple; at Spains Hall, Essex	90
	3. VON SONNLEITHNER, Leopold, advocate and jurist, distinguished as an amateur musician and as the friend of Schubert; at Vienna	75
	4. FRENCH, Col. the Right Hon. FitzStephen, M.P. for Roscommon Co. for a period of 40 years; at Warwick Square, London	72
	6. LOWRY-CORRY, Right Hon. Thos., M.P., 1826-73, First Lord of the Admiralty, 1867-8; at Bournemouth	70
	7. OSSINGTON, Viscount (John Evelyn Denison), M.P., 1823-72, Speaker of the House of Commons 1857-72; at Ossington	73
	8. MADDEN, Sir Frederic, K.H., F.R.S., late keeper of the MSS. Department, British Museum; at St. Stephen's Square	72
	9. OLIPHANT, Thomas, amateur musician and composer; at 38, Great Marlborough Street	72
	–. KNIGHT, Charles, author, publisher, and first editor of the "Companion"; at Addlestone	81
	10. JACKSON, Rev. Thos., Wesleyan Minister; at Hammersmith	89
	11. MACDONAD, Reginald George, Captain and Chief of Clanranald, M.P. for Plympton 1812-24; at Kensington	84
	12. MCILVAINE, Right Rev. Charles Pettit, D.D., D.C.L., Bishop of Ohio; at Florence	75
	13. NEPEAN, Rev. Evan, Canon of Westminster and Chaplain in Ordinary to the Queen; at Westminster	72
	14. KNOX, Colonel Brownlow William, M.P. for Great Marlow, 1847-65; at Wilton Crescent	66
	15. WALL, Henry, M.A., Professor of Logic at Oxford; at Weston-super-Mare	68

		Age.
March 16.	MOODY, Rev. Henry Riddell, Hon. Canon of Canterbury and for more than 50 years Rector of Chartham; at Chartham	81
17.	KEATE, Robert W., Governor of the West Coast Settlements; at Cape Coast Castle	58
20.	CHURCH, Sir Richard, C.B., G.C.H., General; at Athens	88
21.	MARSTRAND, W. N., Danish painter; at Copenhagen	63
22.	SANDFORD, Venerable John, D.D., Archdeacon of Coventry, famous for his exertions to promote the Temperance Movement; at Alvechurch	71
—.	GUICCIOLI, Countess, famous from her connection with Lord Byron	
25.	PARTRIDGE, Professor of Anatomy at the R.A., surgeon, &c.; at Wimpole Street	
26.	COOPER, Charles Purton, Q.C., LL.D., F.R.S.; at Boulogne	79
—.	BERNSTORFF, Albrecht, Count von, German Minister at St. James's; at Prussia House	64
—.	THIERRY, Amédée, French Historian and Senator	76
31.	ALEXANDER, Sir William J., Bart., Q.C., Attorney-General to the Prince of Wales; at St. James's Palace	74
April 1.	MOHL, Hugo von, botanist; in Germany	
3.	DA SILVA, Marciano Henriquez, painter to the King of Portugal and Director of the Royal Gallery; at Lisbon	
4.	HUTHWAITE, Sir Edward, K.C.B., Lieut.-Col., distinguished for his services in the Sikh War, served continuously for 63 years; at Nynee Tal	79
8.	RAE, Sir William, K.C.B., Inspector General of Hospitals and Fleets	
9.	COLLINS, Charles Alston, painter and author; at Thurloe Place, Brompton	45
—.	BOLDERO, Colonel Henry George, formerly M.P. for Chippenham, served under Sir Robert Peel; at Charles Street, St. James's	79
11.	GIRARDIN, M., Vice-President of the French Assembly; at Paris	71
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18.	LAFONT, Pierre Chéri, French actor; at Paris	72
—.	LIEBIG, Baron Justice von, chemist; at Munich	69
19.	HARRIS, Augustus, for 27 years stage manager of the Royal Italian Opera, Covent Garden	
20.	TITE, Sir William, C.B., F.R.S., M.P. for Bath, architect of the Royal Exchange, &c.; at Torquay	75
—.	JONES, Henry Bence, M.D., F.R.S., physician; at Brook Street, Grosvenor Square	
22.	DAVIS, William, landscape painter; in London	60
23.	WILBERFORCE, Henry William, formerly vicar of East Farleigh, Kent, subsequently a distinguished Roman Catholic and editor of the *Weekly Register*; at Woodchester	65
24.	DELAWARR, Earl K.C.B., committed suicide; at Cambridge	57
25.	HOPKINS, John Larkin, Mus. Doc., organist to the University of Cambridge; at Ventnor	53
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27.	MACREADY, William Charles, actor and theatrical manager; at Cheltenham	80

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	2. ARROWSMITH, John, F.R.G.S., F.R.A.S., geographer; at 35, Hereford Square	83
	—. TEULON, Samuel Saunders, architect; at Hampstead	62
	3. DE GENOUILLY, Charles Rigault, Admiral of the French Navy; at Paris	66
	6. ZETLAND, Earl of, K.G.; at Aske Hall, Richmond	77
	9. MILL, John Stuart, philosopher and logician, M.P. for Westminster, 1865–68; at Avignon	67
	—. CHASE, Chief Justice, the inventor of "Greenbacks"; at New York	65
	13. ROBINSON, Thos., D.D., Canon of Rochester, formerly Archdeacon of Madras and Master of the Temple; at Rochester	82
	—. DEUTSCH, Emanuel Oscar, Hebrew and Chaldee scholar and author; at Alexandria	42
	15. COUZA, Prince, formerly Hospodar of Roumania; at Heidelberg	53
	16. MITCHELL, Robert, engraver; at Bromley	52
	18. LUPTON, Thomas Goff, Mezzotint engraver	82
	19. LUCY, Charles, historical painter	59
	20. HELDENMAIER, Dr., founder of the Pestalozzian School, Worksop; at Lausanne, Switzerland	
	—. PARTIER, Sir George Etienne, Bart., late Premier of Canada; at Welbeck Street	58
	21. MARSTRAND, W.N., Danish painter; at Copenhagen	63
	22. EWING, Right Rev. Alex., D.C.L., Bishop of Argyle and the Isles; at Westmill, Herts	59
	—. MANZONI, Alessandro, Italian novelist and poet; at Milan	89
	28. DUKE, Sir James, Bart., Alderman of London; at Laughton, Sussex	81
	—. LUTWIDGE, Robert W. S., Commissioner in Lunacy, from a wound inflicted by a lunatic while visiting an Asylum; at Salisbury	72
	30. WESTERN, Sir Thomas Birch, Bart., Lord-Lieuteuant of Essex, M.P. for East Essex 1865–68; at Felix Hall, Essex	78
June	1. HOWE, Hon. Joseph, Governor of Nova Scotia, formerly a printer and journalist; at Nova Scotia	69
	—. KEKEWICH, Samuel Trehawke, M.P.; at Penmore, Exeter	76
	HOHENZOLLERN, Countess, morganatic widow of Frederic William III of Prussia, and stepmother of the Emperor of Germany	72
	5. RATAZZI, Urbano, Italian Statesman; at Frosinone	65
	—. SUTTON, Sir John, Bart., High Sheriff of Notts in 1867; at Bridges	52
	6. ADALBERT, Prince, of Prussia; at Carlsruhe	61
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	—. VITET, M., Member of the French Assembly and Academy, eminent as an art critic; at Paris	72
	7. MASSON, Edward, formerly Attorney-General for Greece, Judge of the Court of the Areophagus, and latterly Professor of Greek in the Assembly College, Belfast; at Athens	72
	9. TECHENER, M., French publisher; at Paris	
	12. WHITTY, M. G., proprietor and editor of the *Liverpool*	

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June 12. SHAW, Henry, F.S.A., architect and author; at Broxbourne 72

13. VON RAUMER, historian; at Berlin 93

14. HOTTEN, J. C., publisher; at Haverstock Hill 40

16. RICHARDS, W., Upton, M.A., Vicar of All Saints, Margaret Street; at St. Andrew's Place, Regent's Park 62

19. MARJORIBANKS, Lord, of Ladykirk, better known as Mr. David Robertson, M.P. for Berwickshire; at Brook Street 77

—. WALEY, Jacob, Conveyancing Counsel in Court of Chancery; at Wimpole Street 54

23. KIRBY, Elizabeth, author of Works for the young; at Melton Mowbray . . . . . .

—. JAMESON, William, M.D., Caballero of Spain, Professor of Botany and Chemistry in the University of Quito and Director of the Mint of Ecuador; at Quito . . . .

25. HUNT, Thornton Leigh, journalist, eldest son of Leigh Hunt 62

26. MILLER, William, for 41 years organist of St. Giles's, Cripplegate; and formerly organist to the Sacred Harmonic Society; at Gravesend 64

27. POWERS, Hiram, American sculptor; at Florence . .

29. CORNISH, Rev. H. K., author and sacred poet; at Hitcham, Bucks 70

—. GARNIER, Very Rev. Thomas, D.C.L., late Dean of Winchester; at Winchester 97

30. MARSHALL, Mathew, for 54 years in the service of the Bank of England and for 29 years chief cashier; at Beckenham 82

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4. HOLMES, James, late printer and joint proprietor of the *Athenæum;* at Kensington 84

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—. MASTER, Richard T., Captain, half-pay, served in campaigns of 1813, 1814, and 1815, and carried the colours of his regiment at Waterloo; at Baden, Switzerland . 78

11. AITKEN, Rev. Robert, Vicar of Pendeen; at Paddington Station 72

12. PENTLAND, Joseph Barclay, geographer and traveller, who was the first to measure Illimani and Sorata, the highest peaks in America, editor of Murray's Handbooks for Rome and Italy; in London 75

13. CLIVE, Mrs., authoress of "Paul Ferroll," and other novels; burnt to death at Whitfield, Herts 72

—. MCLEAN, John Robinson, M.P. for East Staffordshire; formerly President of the Institute of Civil Engineers, Thanet; at Stonehouse 60

—. ROBERTSON, Captain Frederick, R.A., father of late Rev. F. W. Robertson, of Brighton; at Batheaston . . 85

15. ROSE, Dr. Gustav, German mineralogist; at Berlin . . 75

—. CHASLES, Philarète, French journalist and author, Paris correspondent of the *Athenæum;* at Vienna . . 75

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	24.	WOLVERTON, Lord, (George Carr Glyn), banker, M.P. for Kendal from 1847 to 1868, for many years Chairman of the L.N.W. Railway; at Upper Eccleston Street	76
	—.	BOND, William Henry, R.N., late Secretary of the Reform Club; at Falmouth	78
	27.	TYUTCHEF, Fedor Ivanovich, Russian poet; at Tsarskoe Sels	
	28.	RINALDI, Rinaldo, sculptor; in Italy	80
	31.	OWEN, J. B., Secretary to the Great Eastern Railway Company for 22 years and connected with the line from its commencement; at Hornsey	63
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	2.	MCKEWAN, David Hall, landscape painter	57
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	4.	NEAVE, Rev. H. L., for 51 years Vicar of Epping; at Epping	76
	—.	DE LA ZOUCHE, Lord, diplomatist, Oriental traveller, and author; at Parham, Sussex	63
	6.	BARROT, Odillon, French statesman and orator; at Bouzival	80
	7.	BROWNLOW, John, for 56 years employed at the Foundling Hospital, and for 23 years as Secretary; at Henrietta Street, Brunswick Square	73
	—.	HEAPY, Thomas, painter; at Sussex Street, Pimlico	60
	—.	CHINTREUIL, Antoine, landscape painter; at Paris	59
	8.	RONALDS, Sir Francis, F.R.S., formerly director of Kew Observatory; at Battle	85
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	12.	ANSTEY, T. Chisholm, barrister, formerly M.P. for Youghal and Attorney General of Hong Kong; at Bombay	57
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	—.	WYON, Joseph Shepherd, Chief Engraver of Her Majesty's Seals; at Winchester	57
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	19.	SHERINGHAM, W. L., Admiral; at Paignton	78
	20.	OBERMEIER, Dr. Otto, scientific investigator, died from poison of a cholera-patient injected by himself into his own veins; at Berlin	31
	21.	MERCER, Rev. William, M.A., editor of the Parochial Psalter and Hymn Book, 35 years vicar of St. George's, Sheffield; at Sheffield	62
	22.	WILSON, Rev. William, D.D., Vicar of Holy Rhood, Southampton, 1828-73, and Canon of Winchester 1832-73; at Winchester	90
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	17. HARDWICKE, Right Honorable the Earl of, Lord Lieutenant of Cambridgeshire, &c.; at Southampton.	74
	19. DONATI, Professor, astronomer, discoverer of the Comet of 1858; at Vienna.	
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	21. ANCELL, Henry, of the Admiralty, late managing director and chief promotor of the Civil Service Co-operative Company; at Camberwell.	45
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	22. HENDERSON, John, Commander, R.N., one of the officers in Sir E. Parry's Arctic Expedition in 1821; at Edinburgh.	81
	—. TOOTAL, Edward, director of the L.N.W. Railway, one of its chief promotors; at Eccles	74
	25. TURNER, Samuel, Senior Bencher of Gray's Inn; at Gray's Inn.	83
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Claims.—The total amount of Claims paid upon death from the commencement of the Society to 1st June, 1873, was **£1,050,871.**

Bonus.—The whole available Bonus is the sole property of Life Assurers; no part whatever is taken from it to be shared amongst Proprietors. At the end of every fifth year, profits are equitably apportioned amongst existing Life Assurances. By means of Bonus 585 of the earlier Life Assurances have been relieved altogether from the payment of Annual Premiums, and additions in almost every case have been made to the sums Assured; £280,000 was divided amongst Life Assurances at the last declaration of profits. **The next Bonus will be due 1st June, 1876, and Assurances made previously to such date will share therein.**

Assurers have the privilege, at the time of making an Assurance, of selecting the mode in which the Bonus, whenever due, shall be applied, viz.—in an immediate Cash payment, or to the reduction of the Annual Premium, or to the increase of the Capital sum assured.

ASSURANCES may be effected on LIVES, SURVIVORSHIPS, &c., &c., as stated in the Society's Prospectus, to any amount not exceeding £7,500.

This Society is strictly confined to the Clergy of the Church of England and of the Episcopal Church of Scotland, their Wives and Families, and the near relations of themselves and Wives.

Prospectuses, Bonus Accounts, Forms of Proposal, &c., may be had at the Office, on personal application, or by letter.

2, *Broad Sanctuary Westminster.*

Eagle Insurance Company,

(ESTABLISHED 1807,)

FOR LIVES ONLY,

79, PALL MALL, LONDON, S.W.

DIRECTORS.

CHARLES BISCHOFF, Esq., *Chairman.*

THOMAS BODDINGTON, Esq., *Deputy-Chairman.*

CHARLES CHATFIELD, Esq.
Sir J. BULLER EAST, Bart., D.C.L.
ROBERT ALEX. GRAY, Esq.
W. AUGUSTUS GUY, M.D., F.R.S.
CHARLES JELLICOE, Esq.
RALPH LUDLOW LOPES, Esq.
JAMES MURRAY, Esq., C.B., F.G.S.
PHILIP ROSE, Esq.
GEORGE RUSSELL, Esq.
Admiral TINDAL.

AUDITORS.

HENRY ROSE, Esq. | WM. R. BARKER, Esq.

MEDICAL OFFICERS.

JOHN W. OGLE, M.D. | WILLIAM CHOLMELEY, M.D.

ACTUARY AND SECRETARY.

GEORGE HUMPHREYS, Esq., M.A.

The number of the Company's Policies at the present time is about **Sixteen** Thousand. The total amount assured is upwards of **Eleven** Millions, and the Annual Premiums amount to **£338,129.**

At the last Quinquennial Investigation, the sum of **£184,654** was set aside for distribution, by way of Bonus, amongst the share and policy-holders, an ample provision having been previously made to meet all claims under the then existing Contracts. The sum reserved for future Bonuses, Expenses, and other contingencies, was **£662,916.**

The Divisions of Surplus are quinquennial, and the whole Surplus (less twenty per cent. only) is distributed amongst the participating Policy-holders.

The Annual Reports of the Company's state and progress, Prospectus and Forms, may be had, or will be sent, post free, on application at the Office, or to any of the Company's Agents

THE ECONOMIC
LIFE ASSURANCE SOCIETY,

No. 6, NEW BRIDGE STREET, BLACKFRIARS, LONDON, E.C.

ESTABLISHED 1823.

Empowered by Act of Parliament, 3 William IV.

DIRECTORS.

HENRY BARNETT, Esq., M.P., *Chairman.*

The Rt. Hon. E. PLEYDELL BOUVERIE, M.P., *Deputy-Chairman.*

CHARLES ARTHUR BARCLAY, Esq.
MICHAEL BIDDULPH, Esq., M.P.
EDWARD CHARRINGTON, Esq.
Hon. CHAS. D. R. HANBURY-TRACY, M.P.
JOHN HARMAN, Esq.
CHARLES MORRIS, Esq.
C. H. W. à COURT REPINGTON, Esq.
GEORGE KETTILBY RICKARDS, Esq.
HENRY ROBERTS, Esq.
AUGUSTUS KEPPEL STEPHENSON, Esq.

AUDITORS.

ALFRED BUCKLEY, Esq.
JOHN HOWELL, Esq.
JOHN GILLIAM STILWELL, Esq.
RICHARD TAYLOR, Esq.

Physician.—WM. R. BASHAM, M.D., 17, Chester Street, Belgrave Square.
Surgeon.—GEO. D. POLLOCK, Esq., F.R.C.S., 36, Grosvenor Street, W.
Solicitor.—CHARLES WARING YOUNG, Esq., 12, Essex Street, Strand.
Secretary.—JOHN RALPH GRIMES, Esq.
Actuary.—RICHARD CHARLES FISHER, Esq.

ADVANTAGES OFFERED BY THE SOCIETY:—

The **lowest** rates of Premium on the **Mutual System,** with early participation in Profits.

Table of Annual Premiums required for an Assurance of £100 *for the whole Term of Life, with Participation in Profits.*

	£	*s.*	*d.*		£	*s.*	*d.*
20	1	14	7	35	2	10	11
25	1	19	0	40	2	19	9
30	2	4	3	45	3	11	9

Security.—Invested Assets, upwards of **£2,800,500**

Annual Income, upwards of..... **348,800**

Bonus.—The Society being on the **mutual** principle, the Assured share the **whole of the Profits.**

Assurances granted to the extent of £10,000 on a single life.

Prospectuses and full particulars may be obtained on application to

JOHN RALPH GRIMES, *Secretary.*

EQUITABLE LIFE ASSURANCE SOCIETY,

OPPOSITE THE MANSION HOUSE, LONDON.

Founded A.D. 1762.

BONUS TABLE FOR 1874.

TABLE showing the Amount payable under a Policy for **£1,000** (with its additions), in the event of its becoming a claim after payment of the premium due in the year **1874.**

Policies effected since December 31, 1816.						Sums payable with Additions.	
						£	s.
From	1st Jan.	1817	to	24th April	1817	2602	10
,,	24th April	1817	to	16th April	1818	2722	10
,,	18th April	1818	to	4th Feb.	1819	2642	10
,,	5th Feb.	1819	to	3rd Jan.	1820	2562	10
,,	7th Jan.	1820	to	22nd Dec.	1820	2482	10
,,	23rd Dec.	1820	to	30th Nov.	1821	2402	10
,,	1st Dec.	1821	to	7th Mar.	1823	2322	10
,,	7th Mar.	1823	to	24th May	1824	2242	10
,,	25th May	1824	to	8th Mar.	1825	2162	10
,,	9th Mar.	1825	to	3rd Nov.	1826	2107	10
,,	7th Nov.	1826	to	15th July	1828	2052	10
,,	21st July	1828	to	1st Mar.	1830	1997	10
,,	3rd Mar.	1830	to	24th Nov.	1831	1942	10
,,	24th Nov.	1831	to	1st Aug.	1833	1887	10
,,	1st Aug.	1833	to	18th June	1835	1832	10
,,	19th June	1835	to	21st July	1837	1777	10
,,	21st July	1837	to	22nd Jan.	1839	1722	10
,,	24th Jan.	1839	to	10th Dec.	1840	1667	10
,,	15th Dec.	1840	to	2nd Nov.	1842	1612	10
,,	12th Nov.	1842	to	18th June	1845	1577	10
,,	19th June	1845	to	2nd Mar.	1847	1542	10
,,	3rd Mar.	1847	to	14th Nov.	1848	1507	10
,,	14th Nov.	1848	to	19th Nov.	1850	1472	10
,,	19th Nov.	1850	to	26th July	1853	1437	10
,,	26th July	1853	to	31st Dec.	1855	1402	10
,,	1st Jan.	1856	to	31st Dec.	1856	1367	10
,,	1st Jan.	1857	to	31st Dec.	1857	1332	10
,,	1st Jan.	1858	to	31st Dec.	1858	1297	10
,,	1st Jan.	1859	to	31st Dec.	1859	1262	10
,,	1st Jan.	1860	to	31st Dec.	1860	1245	0
,,	1st Jan.	1861	to	31st Dec.	1861	1227	10
,,	1st Jan.	1862	to	31st Dec.	1862	1210	0
,,	1st Jan.	1863	to	31st Dec.	1863	1192	10
,,	1st Jan.	1864	to	31st Dec.	1864	1175	0
,,	1st Jan.	1865	to	31st Dec.	1865	1140	0
,,	1st Jan.	1866	to	31st Dec.	1866	1105	0
,,	1st Jan.	1867	to	31st Dec.	1867	1070	0
,,	1st Jan.	1868	to	31st Dec.	1868	1035	0

Proposals for New Assurances on any Wednesday between 11 and 1 o'clock.
Commission is *not* allowed by the "Equitable."

J. WARE STEPHENSON, *Actuary.*

Equity & Law Life Assurance Society,

18 LINCOLN'S INN FIELDS, LONDON, W.C.

CAPITAL £1,000,000, IN 10,000 SHARES OF £100 EACH,

Fully Subscribed by upwards of 200 *Members of the Legal Profession, a list of whom may be obtained upon application.*

TRUSTEES.

THE RIGHT HON. EDWD. CARDWELL, M.P.
THE RIGHT HON. SIR WILLIAM ERLE.
THE RIGHT HON. SIR JOHN TAYLOR COLERIDGE.
THE HON. THE VICE-CHANCELLOR SIR RICHARD MALINS.
THOMAS GLOVER KENSIT, Esq.
JOHN MOXON CLABON, Esq.
ROBERT JOHN PORCHER BROUGHTON, Esq.

DIRECTORS.

GEORGE LAKE RUSSELL, Esq., *Chairman.*
JOHN MOXON CLABON, Esq., *Deputy Chairman.*

HENRY WILLIAM BIRCH, Esq.
HENRY FOX BRISTOWE, Esq., Q.C.
ROBERT J. B. BROUGHTON, Esq.
THE HON. MR. BARON CLEASBY.
THE HON. MR. JUSTICE DENMAN.
CHARLES J. DIMOND, Esq.
SIMON DUNNING, Esq.
WILLIAM H. DUNSTER, Esq.
ALEX. STAVELEY HILL, Esq., Q.C., D.C.L., M.P.
WILLIAM EDWARD HILLIARD, Esq.
N. HOLLINGSWORTH, Esq.
JOHN ILIFFE, Esq.
T. GLOVER KENSIT, Esq.
W. BENFORD NELSON, Esq.
FREDERICK PEAKE, Esq.
THE RIGHT HON. SIR R. J. PHILLIMORE.
W. B. S. RACKHAM, Esq.
GEORGE ROBINS, Esq.
ALFRED H. SHADWELL, Esq.
HORACE W. SMITH, Esq., M.A.
RICHARD SMITH, Esq.

AUDITORS.

Elected by the Proprietors—JOHN BOODLE, Esq., G. THOMPSON POWELL, Esq.
Elected by the Assured—JOHN C. TEMPLER, Esq., ARTHUR H. BAILEY, Esq.

Solicitor.—GEORGE ROOPER, Esq., 17, Lincoln's Inn Fields.
Medical Officer.—R. P. COTTON, M.D., 33, Cavendish Square, W.
Actuary and Secretary.—G. W. BERRIDGE, Esq.

The NEW BUSINESS of 1872 comprised insurances for £340,363; and the Premiums received thereon amounted to £13,596 16*s.* 2*d.*

The NET INCOME of the year was £165,578 17*s.* 7*d.*, and the OUTGOINGS £88,630 10*s.* 5*d.* The Funds were increased by the difference—£76,948 7*s.* 2*d.*—and amounted, at the end of the year, to £952,733 9*s.* 7*d.*

The realized PROFITS are ascertained every Five Years; and NINE-TENTHS of the whole are divided among the Assured. As considerably more than one-tenth of the Profits is derived from Policies which do not participate in the Profits, it will be seen that *the Assured have greater advantages in this Society than if they formed a Mutual Insurance Company*, dividing among themselves the whole of the Profits derived from their own Policies.

At the Fifth Quinquennial Division of Profits to 31st December, 1869, the additions to the sums assured averaged no less than Seventy per cent. on the Premiums received during the Five Years on the Policies which participate.

The PREMIUMS are calculated for every half-year of age.

The Conditions of the Policies allow persons whose lives are insured to reside or travel in any part of the world distant more than 33° from the Equator.

Policies in the hands of third parties are not vitiated by suicide, or by the life assured transgressing the stipulated limits.

PRINTED FORMS of notice of assignment furnished when desired.

The Business of the Society includes the PURCHASE and the Granting of LOANS upon the security of LIFE INTERESTS and REVERSIONS; also the Granting of IMMEDIATE ANNUITIES.

The usual commission allowed to Solicitors on all policies introduced by them.

The ANNUAL REPORTS of the Directors are regularly printed, with full accounts of the Receipts and Expenditure, and may be obtained by written or personal application at the Office.

GUARDIAN

Fire and Life Assurance Company,

11, LOMBARD STREET, LONDON, E.C.

West-end Office.—4, WHITEHALL, S.W.

Established 1821, *and Empowered by Special Acts of Parliament.*

DIRECTORS.

HENRY HULSE BERENS, Esq.
HENRY BONHAM-CARTER, Esq.
CHARLES WILLIAM CURTIS, Esq.
CHARLES F. DEVAS, Esq.
FRANCIS HART DYKE, Esq.
Sir WALTER R. FARQUHAR, Bart.
ALBAN G. H. GIBBS, Esq.
JAMES GOODSON, Esq.
ARCHIBALD HAMILTON, Esq.
THOMSON HANKEY, Esq.
RICHARD M. HARVEY, Esq.
JOHN GELLIBRAND HUBBARD, Esq.
FREDERICK HALSEY JANSON, Esq.
G. J. SHAW LEFEVRE, Esq., M.P.
BEAUMONT W. LUBBOCK, Esq.
JOHN MARTIN, Esq.
AUGUSTUS PREVOST, Esq.
WILLIAM STEVEN, Esq.
JOHN G. TALBOT, Esq., M.P.
HENRY VIGNE, Esq.

AUDITORS.

HERBERT G. H. NORMAN, Esq.
CORNELIUS PAINE, Esq.
HENRY SYKES THORNTON, Esq.
NOEL WHITING, Esq.

Secretary.—Thomas Tallemach. *Actuary.*—Samuel Brown.

Manager of Fire Department.—F. J. Marsden.

Physician.—J. Russell Reynolds, Esq., M.D., F.R.S., 38, Grosvenor Street, W.

Solicitors.—Messrs. Parkin & Pagden, 5, New Square, Lincoln's Inn.

Surveyors.—Joseph Jennings, Esq., Langham Street, Cavendish Square.
Messrs. Driver (Valuers for Landed Securities), 4, Whitehall.

Bankers.—Messrs. Martin & Co., 68, Lombard Street; and
Messrs. Coutts & Co., 59, Strand.

Subscribed Capital. . £2,000,000 **Total Invested Funds £2,850,000**
Paid-Up Capital : . : £1,000,000 **Total Annual Income : £390,000**

LIFE DEPARTMENT.

Participating Policy-holders receive every five years four-fifths of the profits realised.

Trust Policies for Wife and Children issued under the "Married Women's Property Act."

Non-forfeiture Policies issued, so that the assured may be under no apprehension as to inability to pay premiums.

Policies payable during life granted on a very moderate scale of premium.

FIRE DEPARTMENT.

Insurances effected upon nearly every kind of Property at home and abroad.

The Premium on common brick or stone private houses, and the ordinary contents, is only 1*s.* 6*d.* for £100, and on furniture generally, including china, glass, pictures, &c., 2*s.* for £100.

The Directors invite attention to the exceptionaliy good security which this Company offers.

The published Accounts and the Prospectus give the fullest information respecting the state of the Company's affairs, and the terms on which Fire and Life Assurances may be effected.

HAND-IN-HAND

FIRE AND LIFE INSURANCE SOCIETY,

TEMPORARY OFFICES:—

35, NEW BRIDGE ST., BLACKFRIARS, LONDON, E.C.

Instituted in 1696.—*Extended to Life Insurance,* 1836.

DIRECTORS.

The Hon. WILLIAM ASHLEY.
T. PALMER CHAPMAN, Esq.
Gen. the Hon. Sir EDWARD CUST.
JOHN LETTSOM ELLIOT, Esq.
JOHN GURNEY HOARE, Esq.
ANDREW JOHNSTON, Esq., M.P.
FREDERICK LOCKER, Esq.
T. FULLER MAITLAND, Esq.
JOHN SPERLING, Esq.
THOMAS TURNER, Esq.
F. MAITLAND WILSON, Esq.
W. ESDAILE WINTER, Esq.

AUDITORS.

JOHN LETTSOM ELLIOT, Esq. JAMES SYDNEY STOPFORD, Esq.

Bankers—Messrs. GOSLINGS and SHARPE, 19, Fleet Street.

Physician—THOMAS K. CHAMBERS, M.D., 24, Mount Street, Grosvenor Square.

Solicitors—Messrs. NICHOLL & NEWMAN, 8, Howard Street, Strand.

Actuary—JAMES M. TERRY, Esq.

Assistant Actuary—JAMES TERRY, Esq.

The oldest Insurance Office in existence. Founded and still conducted on the **Mutual System.**

Large Returns made to Members **in each Department.**

The whole of the Profits are divided annually amongst the Members of Five Years' standing and upwards—there being no Shareholders.

The rate of abatement of Premium thereby given for the current year on Life Policies is 60 per cent. for the Old Series, and **50 per cent.** for the New Series.

The rate of Bonus return on Septennial Fire Policies (charged at 1*s.* 6*d.* per cent.) **is 66 per cent.**

The Directors are willing to appoint as Agents, persons of good position and character.

31st DECEMBER, 1872.

Claims paid on Life Policies to this date	£1,003,921.
Amount of Profits returned ditto	746,996.

ASSETS.

Accumulated Fund	£1,463,722.
Present Value of Life Premiums	1,399,058.

LIABILITIES.

Present Value of Sums Insured (£3,548,317)	£1,729,465.
Present Value of Life Annuities (£8,364 per Ann. and £360 Contingent)	58,848.

The Accounts of the Society may be had on application at the Office.

BENJAMIN BLENKINSOP, *Secretary.*

b 3

The Liverpool and London and Globe INSURANCE COMPANY.

All Directors must be Proprietors in the Company.

Trustees of Company.

T. BROCKLEBANK, Esq., H. LITTLEDALE, Esq., J. A. TOBIN, Esq., Liverpool.
Sir CHARLES NICHOLSON, Bart., H. V. EAST, Esq., WM. NICOL, Esq., London.

Trustees of Globe Million Fund.

Sir JOHN MUSGROVE, Bart., Sir CHARLES NICHOLSON, Bart., WM. NEWMARCH, Esq., JOHN W. ROBINS, Esq., CAPTAIN TYLER.

DIRECTORS.

LIVERPOOL BOARD.—OFFICE: No. 1, DALE STREET.

Chairman—THOMAS BROCKLEBANK, Esq.

Deputy Chairmen—H. LITTLEDALE, Esq., and J. HUBBACK, Esq.

CHAS. T. BOWRING, Esq.
ALFRED CASTELLAIN, Esq.
C. J. CORBALLY, Esq.
THOMAS EARLE, Esq.
ARTHUR P. FLETCHER, Esq.
CHAS. I. FORGET, Esq.
H. B. GILMOUR, Esq.
THOMAS HAIGH, Esq.
W. D. HOLT, Esq.
G. H. LOXDALE, Esq.
H. H. NICHOLSON, Esq.
WILLIAM PATON, Esq.
J. ROME, Esq.
CHAS. SAUNDERS, Esq.
J. A. TOBIN, Esq.
EDWARD TOOTAL, Esq.

Secretary of the Company—HENRY THOMSON, Esq.
Assistant Secretary—J. M. DOVE, Esq.
Auditors—PETER S. BOULT, Esq., and ISAAC KITCHEN, Esq.
Medical Referees—J. R. W. VOSE, Esq., M.D., and E. R. BICKERSTETH, Esq.
Bankers—BANK OF LIVERPOOL; UNION BANK OF LONDON.
Solicitors—Messrs. LACES, BANNER, BIRD, NEWTON, and RICHARDSON.

LONDON BOARD.—1, CORNHILL, AND CHARING CROSS.

Chairman—Sir CHAS. NICHOLSON, Bart., D.C.L.

Deputy-Chairman—W. NICOL, Esq.

W. DENT, Esq.
Hon. E. DRUMMOND.
HENRY V. EAST, Esq.
R. W. GAUSSEN, Esq.
Hon. A. CARR GLYN.
W. MACNAUGHTAN, Esq.
ROSS D. MANGLES, Esq.
JAMES MORLEY, Esq.
G. D. WHATMAN, Esq.

Actuary of the Company and Resident Secretary—AUG. HENDRIKS, Esq.
Fire Superintendent—T. SEPTIMUS MARKS, Esq.
Auditor—H. H. CANNAN, Esq.
Medical Referees—J. R. BENNETT, Esq., M.D., A. ANDERSON, Esq., F.R.C.S.
Consulting Surgeon—Sir JAMES PAGET, Bart.
Bankers—THE LONDON AND COUNTY BANK; Messrs. GLYN, MILLS, CURRIES, and Co.
Solicitors—Messrs. PALMER, BULL, and FRY.
Surveyors—E. N. CLIFTON, Esq., and WM. THOMPSON, Esq.

At the **ANNUAL MEETING**, held February 26th, 1873, the Report of the Directors for the Year 1872 showed that:—

The Fire Premiums were.....£1,258,984	The Annuities Payable..... £59,042
New Life Premiums £16,534, and the total £267,505	The Invested Funds.....£3,626,927

AUG. HENDRIKS,
Actuary and Resident Secretary.

THE

LONDON ASSURANCE CORPORATION,

Incorporated by Royal Charter, A.D. 1720.

No. 7, ROYAL EXCHANGE, LONDON, E.C.

ROBERT GILLESPIE, Esq., *Governor.*
EDWARD BUDD, Esq., *Sub-Governor.*
MARK WILKS COLLET, Esq., *Deputy-Governor.*

DIRECTORS.

Nath. Alexander, Esq.	John Entwisle, Esq.	Capt. R. W. Pelly, R.N.
J. A. Arbuthnot, Esq.	George L. M. Gibbs, Esq.	David Powell, Esq.
James Blyth, Esq.	Edwin Gower, Esq.	William Rennie, Esq.
Harvey Brand, Esq.	A. C. Guthrie, Esq.	P. F. Robertson, Esq.
Alfred D. Chapman, Esq.	John A. Hankey, Esq.	Robert Ryrie, Esq.
Sir F. Currie, Bart.	Louis Huth, Esq.	David P. Sellar, Esq.
G. B. Dewhurst, Esq.	Henry J. B. Kendall, Esq.	Lewis A. Wallace, Esq.
Bonamy Dobree, Esq.	Charles Lyall, Esq.	William B. Watson, Esq.

Secretary.
JOHN P. LAURENCE, Esq.

Actuary.
ARTHUR H. BAILEY, Esq.

Underwriter.
JOHN ANTHONY RUCKER, Esq.

Manager of the Fire Department.
THOMAS B. BATEMAN, Esq.

Manager of Agencies.
PHILIP SCOONES, Esq.

Physician.
EDWARD CLAPTON, M.D., St. Thomas's Street, Southwark.

Solicitors.
Messrs. UPTON, JOHNSON, UPTON, & BUDD, 20, Austin Friars.
Messrs. COLLYER-BRISTOW, WITHERS, & RUSSELL, 4, Bedford Row.

West End Agents.
Messrs. GRINDLAY & CO., 55, Parliament Street, S.W.

This Corporation has granted Fire, Life, and Marine Assurances for more than a Century and a half.

The Share Capital is £896,550, of which one-half, or 448,275, has been paid up. The total Funds, on the 31st December, 1872, amounted to £2,744,636.

The printed Accouuts of the Corporation, in conformity with the provisions of "The Life Assurance Companies' Act, 1870," may be had on application.

LIFE DEPARTMENT.

Life Assurances may be effected either with or without Participation in Profits.

Loans will be granted on unincumbered Policies that have been in force at least three years, to the extent of their surrender value, provided that such value exceeds £50.

FIRE DEPARTMENT.

Fire Insurances can be effected with the Corporation at moderate rates of Premium.

MARINE DEPARTMENT.

Policies of Marine Insurance are issued at the Head Office, and at Calcutta, Madras, Bombay, Mauritius, Hong Kong, and Shanghai.

JOHN P. LAURENCE, *Secretary.*

THE

LONDON LIFE ASSOCIATION,

81, KING WILLIAM STREET, LONDON, E.C.

ESTABLISHED 1806.

President—THE BARON HEATH, F.R.S.
Vice-President—ALFRED HEAD, Esq.

Trustees.

FRANCIS HENRY MITCHELL, Esq. | GEORGE FRED. POLLOCK, Esq.
JAMES EWING MATHIESON, Esq. | GEORGE HANBURY, Esq.

Directors.

JOHN BAGGALLAY, Esq. | THOMAS DEVAS, Esq.
MARK CATTLEY, Esq. | GABRIEL GOLDNEY, Esq., M.P.
GORDON WYATT CLARK, Esq. | HENRY S. KING, Esq.
WILLIAM CORRIE, Esq. | JOS. JOHNSON MILES, Esq.
JOHN COSTEKER, Esq. | ROBERT POTT, Esq.
HENRY T. CURTIS, Esq. | S. W. SILVER, Esq.

Policies now in Force	**£7,800,000**
Fund accumulated and invested in First Class Securities upwards of	**3,150,000**
Policy Claims Paid	**6,250,000**

The Association employs no Agents, and pays no Commission in any shape, for the introduction of Policies.

Its expenses are small, being about 2½ per cent. of its gross income.

An investigation of its affairs is made every year, and the surplus is applied solely to the reduction of the Premiums, such reduction commencing with the eighth payment.

During the last 30 years the reduction has *increased*, on an average, at the rate of about One per cent. per annum; and as the mortality among its Members continues to be much within the estimate, and the funds of the Society are invested at a higher rate of interest than is assumed in the valuations, it is expected that the Premiums may be still further reduced.

Premiums commenced before Jan., 1856, are this year reduced 93½ per cent.
" " July, 1865 " 83½ "
" " July, 1867 " 68½ "

EDWARD DOCKER, *Secretary.*

FORTIETH YEAR.

THE MUTUAL
LIFE ASSURANCE SOCIETY.

ESTABLISHED 1834.

39. *KING STREET, CHEAPSIDE, E.C.*

CASH ASSETS - - - - - £800,000
ANNUAL REVENUE - - - £110,000
Has PAID ASSURERS in CLAIMS and BONUS - - - - - £900,000

AGENTS WANTED.

All Profits belong to Members only.
Profits are divided annually.
Liberal Surrender-Values.
Bonuses extinguish Premiums.
Policies not forfeited by accidental omission to pay Premium.
No extra Premiums for Foreign Travel or Residence, after Policy is Five years old and Life Thirty.
Average Bonus paid—30 per cent. on Sum Assured.

The following statement of Claims, with Bonuses, paid during 1872 *and* 1873, *invites examination.*

Date of Policy.	Policy Number.	Sum Assured.	Amount paid on Policy.	Proportion of Bonus paid.
1834	23	£1,000	£1,819	81·9 per cent.
,,	36	1,000	1,836	83·6 ,,
,,	116	1,000	1,862	86·2 ,,
1837	311	1,000	1,876	87·6 ,,
1840	650	1,000	1,672	67·2 ,,
1844	839	1,000	1,521	52·1 ,,
1846	1,150	1,000	1,550	55·0 ,,
1849	1,515	1,000	1,544	54·4 ,,
,,	1,601	1,000	1,441	44·1 ,,
1852	2,018	1,000	1,449	44·9 ,,

Prospectuses, Copies of Parliamentary Accounts, Proposal Forms, and all necessary information may be obtained on application to the ACTUARY, at the HEAD OFFICE,

39, KING STREET, CHEAPSIDE, LONDON, E.C.

MUTUAL LIFE ASSURANCE.

ESTABLISHED 1837.

SCOTTISH PROVIDENT INSTITUTION.

HEAD OFFICE: *No. 6, St. Andrew Square, Edinburgh.*
LONDON OFFICE: 18, *King William Street, City, E.C.*

THE PREMIUMS are so moderate that at most insuring ages an assurance of £1,200 or £1,250 may be secured from the first for the same yearly payment which would elsewhere assure £1,000 only.

The whole PROFITS go to the Policyholders, on a system at once safe, equitable, and favourable to good lives—no share being given to those by whose early death there is a *loss*. The effect of reserving the surplus for the survivors (who will, however, comprise more than half the members) has been that policies for £1,000 have already been increased to £1,400, £1,600, and even to £1,800.

EXAMPLES of ANNUAL PREMIUMS for £100 at Death (with Profits).

AGE	25	30	35	40	45	50
	£	£	£	£	£	£
Payable *during Life* ..	1 18 0	2 1 6*	2 6 10	2 14 9	3 5 9	4 1 7
Limited *to* 21 *Payments* ..	2 12 6	2 15 4	3 0 2	3 7 5	3 17 6	4 12 1

The Rates for ten, fifteen, or twenty payments may be had.

* Thus, a person of 30 may secure £1,000 at death by a yearly payment *during life* of £20 15*s*. This Premium, if paid to any other of the Scottish Mutual Offices, would secure £800 only, instead of £1,000;

Or he may secure the same sum of £1,000 by 21 yearly payments of £27 13*s*. 4*d*. At age 40, the Premium, *ceasing at* 60, is, for £1,000, £33 14*s*. 2*d*.; about the same as most Offices require for the whole of life.

The FUNDS are securely invested, chiefly on mortgage of lands and other non-fluctuating securities. The amount,—above TWO MILLIONS—is larger (notwithstanding the lowness of the Premiums) than in any Office in the Kingdom of the same age.

PROGRESS of the INSTITUTION in the last FIVE YEARS.

In Year.	New Policies.	Amount Assured.	Claims in Year.	Funds at end of Year.	Increase of Funds.
		£	£	£	£
1868	1092	541,127	80,284	1,499,015	133,650
1869	1190	581,036	93,663	1,636,249	137,234
1870	1163	612,025	111,057	1,765,251	139,002
1871	1336	713,045	114,070	1,902,646	137,395
1872	1461	757,779	114,031	2,049,821	147,175

Full STATEMENTS *of* PRINCIPLES *will be found in the Annual* REPORTS.

JAMES WATSON, *Manager.*
J. MUIR LEITCH, *London Secretary.*

General Life & Fire Assurance Company,

62, KING WILLIAM STREET, LONDON, E.C.

ESTABLISHED 1837. **CAPITAL—£1,000,000.**

DIRECTORS.

T. Challis, Esq., Ald., *Chairman.* Rt. Hon. C. P. Villiers, M.P., *Deputy-Chairman.*

The Right Hon. The Lord Mayor, M.P.	Andrew Lusk, Esq., Ald., M.P.
James Abbiss, Esq., J.P.	James Pilkington, Esq.
William Delf, Esq.	Henry William Ripley, Esq.
Michael Hall, Esq.	Edward Steane, D.D.
Charles James Heath, Esq.	Alfred Watkin, Esq.

Secretary—George Scott Freeman, Esq.

Medical Officers. { J. R. Bennett, Esq., M.D., 15, Finsbury Square, London. P. H. Pye-Smith, 31, Finsbury Square, London.

EXAMPLES OF LAST BONUS.

Amount Assured.	Premiums Paid.	Bonus added to Policy.
£2000	£405 0 0	£126 0 0
1000	80 0 0	40 0 0
1000	42 16 8	26 0 0
500	26 16 8	13 0 0
200	7 19 4	5 0 0

LOAN DEPARTMENT.

Loans from £100 to £1000 advanced on Personal Security, and the Deposit of a Life Policy to be taken out by the Borrower with the Company.

Loans, without any further security, are advanced on Policies which have been four years in force, and have attained the value of £25.

Loans on Mortgage of Freehold and Leasehold Property, Debentures, Share Scrip, Life Interests, and all kinds of valuable security on specially favourable terms.

GRESHAM LIFE ASSURANCE SOCIETY,

37, OLD JEWRY, LONDON.

REALISED ASSETS - - - - £1,715,049.

FAMILY TRUST POLICIES.

THE Act of Parliament, called the "Married Women's Property Act, 1870," passed in the last Session, having opened out a new field for Life Assurance, Special Forms of Trust Policy have been prepared for assuring the life of a husband for the separate benefit of his wife, and also for the separate benefit of his wife and children.

By the "Married Women's Property Act," such Policies are free from Liability to the Creditors of the Husband's Estate; consequently, this form of Assurance is especially to be recommended where a provision for a family is desired.

For Forms of Proposal, apply to the Society's Agents, or to

F. ALLAN CURTIS, *Actuary and Secretary.*

THE

GENERAL REVERSIONARY & INVESTMENT COMPANY.

Office—No. 5, WHITEHALL, LONDON, S.W.

ESTABLISHED 1836.

Further Empowered by Special Act of Parliament, 14 and 15 Vict., cap. 130.

CAPITAL, £500,000.

DIRECTORS.

Chairman—GEORGE PERCY ELLIOTT, ESQ.
Deputy Chairman—SEYMOUR TEULON, ESQ.

MAYOW WYNELL ADAMS, Esq.
THOMAS ALLEN, Esq.
THOMAS BLACKALL, Esq., M.D.
JOHN CHAVE LUXMOORE, Esq.
Colonel JOSEPH W. JASPER OUSELEY.
EDWARD WALMISLEY, Esq.

Auditors—WM. R. BARKER, Esq., GEO. HUGHES, Esq., and CHAS. H. SAVORY, Esq.
Bankers—Messrs. DRUMMOND.
Solicitor—HARRY SHOUBRIDGE, Esq., 1, Lincoln's Inn Fields, W.C.

The business of this Company consists in the PURCHASE of, or LOANS upon—
REVERSIONARY INTERESTS, vested or contingent, in *Landed* or *Funded Property*, or *Securities*; also
LIFE INTERESTS in *Possession*, as well as in *Expectation*; and
POLICIES of INSURANCE upon LIVES.

Loans upon Reversions may be obtained either at an Annual Interest, or in consideration of deferred charges, payable upon the *Reversions* falling in.

IMMEDIATE ANNUITIES are likewise granted upon the latter principle to persons entitled to Reversionary Interests, who may thus obtain an income until their property falls into possession, without being called upon for any payment until that event.

Prospectuses and Forms of Proposal may be obtained from the Secretary, to whom all communications should be addressed.

By order of the Board of Directors,
WM. BARWICK HODGE, *Actuary and Secretary.*

GOVERNESSES' BENEVOLENT INSTITUTION.

INCORPORATED BY ROYAL CHARTER,

WITH POWER TO HOLD LAND BY GIFT OR PURCHASE.

BOARD OF MANAGEMENT.

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JOHN JEFFRYES OAKLEY, Esq.
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EDWARD THORNTON, Esq.
T. PARRY WOODCOCK, Esq.

Honorary Secretary—MRS. DAVID LAING.
Secretary—CHARLES WILLIAM KLUGH, Esq., 32, Sackville Street, W.
Secretary to the Provident Fund—JOHN EVEREST, Esq.

The objects of this Society are—

Temporary Assistance to Governesses in distress, afforded privately and delicately, through the Ladies' Committee.

Annuity Fund. Elective Annuities to Aged Governesses, secured on invested capital, and thus independent of the prosperity of the Institution.

Provident Fund. Provident Annuities purchased by Ladies in any way connected with Education, upon Government Security, agreeably to the Act of Parliament. This branch includes a Savings Bank.

A Home for Governesses during the intervals between their engagements.

A System of Registration, entirely free of expense.

An Asylum for the Aged.

Membership consists in the payment of an annual Guinea, or of Ten Guineas in one sum. Subscribers are entitled to vote for Annuities in the proportion of one Vote for each Annual Half-Guinea not in arrear, and for each Donation of Five Guineas. Subscriptions are due on the 1st of January, and can always be remitted by Post-Office Order, or by a Cheque crossed 'Sir S. Scott & Co.'

NATIONAL
LIFE ASSURANCE SOCIETY,

2, KING WILLIAM STREET, LONDON, E.C.

FOR MUTUAL ASSURANCE.

ESTABLISHED 1830.

This Society does NOT pay Commission for the introduction of business, and consequently does not employ any Agents to recommend it.

But it offers great advantages to assurers in the two points of most importance to them, viz.:—

SAFETY, which is guaranteed by a reserve Fund exceeding £600,000, being in the unusually large proportion of more than 90 PER CENT. of the whole of the premiums which have been received upon existing Policies; and

LARGE BONUSES, the whole of the profits being applied in the gradual reduction and ultimate extinction of the Assurer's premiums.

Prospectuses forwarded post free on application to

CHARLES ANSELL, JUN., *Actuary.*

NATIONAL PROVIDENT INSTITUTION,

GRACECHURCH STREET, LONDON.

Established December, 1835.

Mutual Assurance without Individual Liability.

DIRECTORS.

Chairman—CHARLES GILPIN, Esq., M.P.
Deputy-Chairman.—CHARLES WHETHAM, Esq., Alderman.

WILLIAM JOHN BARRON, Esq.
HENRY WHITE CASTLE, Esq.
Sir THOMAS CHAMBERS, Knt., Q.C., M.P.
JOSEPH FELL CHRISTY, Esq.
HENRY CONSTABLE, Esq.
ROBERT MAYNE CURTIS, Esq.
WILLIAM J. HASLAM, Esq.
CHARLES W. C. HUTTON, Esq.
CHARLES REED, Esq., F.S.A., M.P.
JOHN SCOTT, Esq.
JONATHAN THORP, Esq.

Medical Officers—THOMAS B. PEACOCK, Esq., M.D., & JOHN GAY, Esq., F.R.C.S.
Solicitor—SEPTIMUS DAVIDSON, Esq.
Consulting Actuary—CHARLES ANSELL, Esq., F.R.S.

Amount of Profit of the five years ending 20th November, 1872				£519,223	16 5
Total Profit realised since the commencement				£2,305,330	17 6
Gross Annual Income for the year 1872, from					
Premiums	£312,914	12	4		
Ditto, Ditto, Interest ...	£124,429	9	1		
				£437,344	1 5
Expenses of Management (including Commission)				£20,525	2 7
Amount of Accumulated Fund on the 20th November, 1872 ...				£3,205,055	15 4
Amount paid in claims				£3,176,620	7 3

Advances are made on the Society's Policies to the extent of their value.

The Prospectus, with the last Report of the Directors, and all other information, may be had on application at the Office.

HENRY RANCE, *Secretary.*

PELICAN
LIFE INSURANCE COMPANY,
ESTABLISHED IN 1797.
70, LOMBARD STREET, CITY; AND 57, CHARING CROSS, WESTMINSTER.

DIRECTORS.

HENRY R. BRAND, Esq., M.P.
OCTAVIUS E. COOPE, Esq.
JOHN COOPE DAVIS, Esq.
HENRY FARQUHAR, Esq.
CHAS. EMANUEL GOODHART, Esq.
KIRKMAN D. HODGSON, Esq., M.P.
HENRY LANCELOT HOLLAND, Esq.
SIR J. LUBBOCK, Bart., M.P., F.R.S.
JOHN STEWART OXLEY, Esq.
BENJAMIN SHAW, Esq.
DUDLEY ROBERT SMITH, Esq.
M. WYVILL, Esq.

This Company offers COMPLETE SECURITY.

MODERATE RATES of Premium, with Participation in Four-fifths, or 80 per Cent., of the Profits.

LOW RATES without Participation in Profits.

LOANS in connection with Life Assurance, on approved Security, in sums of not less than £500.

ANNUAL PREMIUM required for the Assurance of £100 for the whole term of life:—

AGE.	WITHOUT PROFITS.	WITH PROFITS.
15	£1 11 0	£1 15 0
20	1 13 10	1 19 3
30	2 4 0	2 10 4
40	2 18 10	3 6 5
50	4 0 9	4 10 7
60	6 1 0	6 7 4

ROBERT TUCKER, *Secretary and Actuary.*

ROCK LIFE ASSURANCE COMPANY.
ESTABLISHED A.D. 1806.
No. 15, NEW BRIDGE ST., BLACKFRIARS, LONDON, E.C.

DIRECTORS.

G. P. BIDDER, Esq.
The Right Hon. J. G. DODSON, M.P.
G. A. FULLER, Esq.
J. GODDARD, Esq.
R. HUDSON, Esq., F.R.S.
J. KELK, Esq.
S. LAURENCE, Esq.
Lieut.-Gen. Sir G. St. P. LAWRENCE, K.C.S.I., C.B.
T. H. LONGDEN, Esq.
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C. RIVAZ, Esq.
W. B. TOWSE, Esq.
H. TRITTON, Esq.
S. H. TWINING, Esq.

The **ROCK LIFE ASSURANCE COMPANY**, which has been established upwards of **Half a Century**, has an **Accumulated Fund** of more than **Three Millions Sterling**, invested in Mortgages on Land, and other first-class Securities:—

	£	s.	d.
Viz., on the 20th August, 1868	3,172,604	15	8
Sum Assured—Inclusive of Bonus Additions—at that date	5,380,750	2	11
Estimated Liability thereon (Northampton Table of Mortality, 3 per Cent. Interest).	1,481,569	0	4
That is less than one-half the Fund invested.			
Total Amount of Bonus Additions made to Policies	2,895,059	19	9
Amount of Profits divided for the Seven Years ending 20th August, 1868	532,369	7	8
Annual Income	314,867	14	3
Total Claims paid—Inclusive of Bonus Additions	6,627,044	7	7

*** Copies of the Accounts deposited with the Board of Trade, pursuant to "The Life Assurance Companies' Act, 1870," as well as of the Periodical Valuation Accounts, and every information may be obtained on application.

H. W. PORTER, *Actuary.*

ROYAL EXCHANGE ASSURANCE CORPORATION.

(Established by Royal Charter, A.D. 1720.)

FOR SEA, FIRE, LIFE, AND ANNUITIES.

Chief Office, Royal Exchange, London; Branch, 29, Pall Mall.

THE ACCUMULATED FUNDS EXCEED £3,600,000.

JAMES STEWART HODGSON, Esq., *Governor*. CHAS. JOHN MANNING, Esq., *Sub-Governor*
FRANCIS ALEXANDER HAMILTON, Esq., *Deputy-Governor*.

Directors.

ROBERT BARCLAY, Esq.
JOHN GARRATT CATTLEY, Esq.
MARK CURRIE CLOSE, Esq.
EDWARD JAMES DANIELL, Esq.
WILLIAM DAVIDSON, Esq.
LANCELOT WILLIAM DENT, Esq.
ALEXANDER DRUCE, Esq.
FREDERICK JOSEPH EDLMANN, Esq.
CHARLES HERMANN GÖSCHEN, Esq.
CHARLES SEYMOUR GRENFELL, Esq.
ROBERT AMADEUS HEATH, Esq.
WILMOT HOLLAND, Esq.
EGERTON HUBBARD, Esq.
WILLIAM KNOWLES, Esq.
NEVILE LUBBOCK, Esq.
GEORGE FORBES MALCOLMSON, Esq.
DANIEL MEINERTZHAGEN, Esq.
WILLIAM ROBERT MOBERLY, Esq.
Lord JOSCELINE WM. PERCY.
CHARLES ROBINSON, Esq.
SAMUEL LEO SCHUSTER, Esq.
ERIC CARRINGTON SMITH, Esq.
OCTAVIUS WIGRAM, Esq.
CHARLES BARING YOUNG, Esq.

Physician—T. M. DALDY, Esq., M.D., 41, Finsbury Square.

FIRE ASSURANCES on Liberal Terms.

Life Assurances with or without participation in Profits.

Divisions of Profit every **Five Years.**

A liberal participation in Profits, with the guarantee of a large invested Capital Stock, and exemption, under Royal Charter, from the Liabilities of Partnership.

The advantages of modern practice, with the security of an Office whose resources have been tested by the experience of **more than a Century and a half.**

A Prospectus, Table of Bonus, and Balance Sheet will be forwarded on application.

ROBERT P. STEELE, *Secretary*.

SOVEREIGN LIFE ASSURANCE COMPANY,

48, ST. JAMES'S STREET, LONDON, S.W.

CITY OFFICE—110, CANNON STREET, E.C.

ESTABLISHED 1845.

(*Empowered by Special Act of Parliament.*)

Directors.

Chairman—Sir JAMES CARMICHAEL, Bart.

Deputy Chairman—JOHN ASHBURNER, Esq., M.D.

Lieutenant-Colonel BATHURST.
JOHN GARDINER, Esq.
J. W. HUDDLESTON, Esq., Q.C.
CHARLES WILL. REYNOLDS, Esq.
Sir J. E. EARDLEY-WILMOT, Bart.

This Office makes ADVANCES to Assurers on Real and, to a limited extent, on Personal Security; it presents the following advantages:—

The security of a large Accumulated Fund.

Moderate rates for all ages, climates, and circumstances connected with Life Assurance.

Prospectuses, Forms, and every information can be obtained at the Office.

HENRY D. DAVENPORT,
Secretary.

Universal Life Assurance Society,

1, KING WILLIAM STREET, LONDON, E.C.

Established 1834. *By Special Act of Parliament.*

SUBSCRIBED CAPITAL, HALF-A-MILLION.

JOHN FARLEY LEITH, Esq., Q.C., M.P., *Chairman.*
WILLIAM NORRIS NICHOLSON, Esq., *Deputy-Chairman.*

GEORGE HENRY BROWN, Esq.	JOHN JACKSON, M.D.
The Hon. JAMES BYNG.	JAMES JOSEPH MACKENZIE, Esq.
HENRY WALFORD GREEN, Esq.	Sir ROWLAND M. STEPHENSON.
OSGOOD HANBURY, Jun., Esq.	CHAS. FREVILLE SURTEES, Esq.

FREDERICK HENDRIKS, Esq., *Actuary and Secretary.*

The accumulated profits of the Universal, at the Thirty-ninth annual investigation in 1872 amounted to **£237,856.** Upwards of four-fifths of this sum is reserved to enter into the average of future years. The remaining fifth allows of a reduction of the premium upon all participating policies six years in force on the same liberal scale as for several years past; namely, 50 per cent. or one-half the original premium. Policies, English or Indian, upon which the premium was originally **£100,** will thus be charged with **£50** only of premium for the current year, May, 1873-74.

Policies in force, **£3,222,388.** Accumulated funds, **£967,709.** Annual income, **£162,604.**

The Directors beg to draw the attention of the public to the great economy of premiums in this Society, to its large reserves, and to its experience of nearly 40 years, during which it has secured the utmost possible benefit to the assured. The policy-holders have received cash returns of upwards of **£750,000,** in addition to about two millions sterling paid in claims upon deaths in this country, and amongst officers in the civil and military services of India.

Branch Offices and Agencies in Calcutta, Madras, Bombay, and Ceylon. Additional Agents required in the United Kingdom.

Rates for Indian Assurances, without bonuses, largely reduced.

THE NATIONAL REVERSIONARY INVESTMENT COMPANY,

INSTITUTED 1837,

For the Purchase of Absolute or Contingent Reversions, Life Interests, and Policies of Assurance on Lives.

OFFICE—No. 63, OLD BROAD STREET, LONDON, E.C.

John Pemberton Heywood, Esq.—*Chairman.*
C. N. Wilde, Esq.—*Deputy Chairman.*

Forms for submitting Proposals for Sale may be obtained at the Offices of the Company.

G. A. Rendall, *Secretary.*

PROTECTOR ENDOWMENT LOAN AND ANNUITY COMPANY.

34, KING STREET, CHEAPSIDE, LONDON, E.C.

The Directors of the above Company are prepared to ADVANCE MONEY by way of LOAN in SUMS of from £50 to £2,000. If on Personal Security, the entire amount applied for will be advanced. The repayments may be made by equal instalments extending over one, two, or three years, and in case of the Borrower's death before repayment be completed, his representatives and securities will be exonerated.

Money received on Deposit, at a fixed rate of 5 per cent.

For Prospectuses, Terms, and all other information, apply at the Chief Offices as above, or to any of the Company's Agents in the Country.

ALEX. M'MORRAN, *Secretary.*

"As indispensable as Bradshaw."—*Times.*

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